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SURGING SERVICES

Worldwide IT
services spending

1997	\$281.7B
1999	\$337.3B*
2001	\$403.2B*

*Projected

Spending includes IT consulting,
systems integration, software
development and maintenance,
business process outsourcing,
training and hardware support

Source: International Data Corp., Framingham, Mass.

Vendors target service, IT customers nervous

By Craig Stedman
and Jaskumar Vijayan

MORE AND MORE enterprise
technology vendors are trying
to get big money services and
consulting contracts out of their
customers, a trend that puts
IT buyers on the horns of a big
dilemma.

Leaning on a vendor to help
implement the complex soft-
ware it sells could simplify life
for companies that already have
made their product choices. In
that contrast, moves such as
Computer Associates Interna-
tional, Inc.'s \$9 billion bid to
buy Computer Sciences Corp.

Objectivity key, page 8

Y2K shortcoming may shutter some banks

► Overseer FDIC also falls behind on its own compliance

By Matt Hamblen
WASHINGTON

SOME OF THE nation's private
banks will face closure or loss of
federal deposit insurance, possi-
bly as early as September, if fed-
eral auditors find they can't fix

year 2000 problems on time.

A closure would force banks
to secure deposits and make
sure they are returned to cus-
tomers, much the same way fed-
eral authorities close a bank for
insolvency or other problems.
Ironically, the agency that

oversees those banks — the Fed-
eral Deposit Insurance Corp. —
itself has fallen eight months
behind in its year 2000 prepara-
tions (see story, page 96).

The overwhelming majority
of banks are on schedule to fix
their year 2000 problems. But
of the 2,000 small to midsize

FDIC, page 96

You don't need no stinkin'
badges? Think again. Certification
can be your ticket to
fame and fortune. A Micro-
soft Certified Systems Engi-
neer badge, for example, can
net you a \$10,000 salary
boost. And there are
plenty of other big
payouts.

By Garrison, page 17

Drugstore merger pins managed care hopes on IT jewel

By Julia King

IT SAVVY is key to CVS Corp.'s
bold bid to become America's
largest pharmacy chain.

Last week's \$1.48 billion offer
for Arbor Drugs, Inc. gives CVS
207 highly profitable drugstores
and the No. 1 status in the
quickly consolidating drugstore
industry.

The Woonsocket, R.I., chain
also gains access to a relatively
small, but ultrasophisticated in-
formation technology organiza-
tion. Troy, Mich.-based Arbor's
IT unit has a long track record of
providing a high return on in-

Drugstore merger, page 14

William Shundon (right), consultant and Java columnist, says
Windows is on its last legs; Rob Enderle, PC analyst at Giga
Information Group, says Windows is alive and kicking

INSIDE THE BUSINESS

AVOIDING ONLINE CANNIBALISM

Companies worry about alienating traditional sales outlets. Page 2

E-mail's Y2K bug

Look past your mailframes for millennium mail migraines. Page 4

IS HYDRA HYPE ALL WET?

Users are confused by Microsoft's thin-client strategy. Page 12

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The big get bigger

Computer Associates bids for Computer Sciences. Compaq acquires Digital. Netscape seeks buyers. And it's only February!

What's going on here? Quite simply, a resumption of the industry consolidation that has been taking place for some time. What makes the sudden flurry of events seem so unusual is that the industry had taken a two-year hiatus from buyouts to assess and absorb the impact of the Internet.

That done, the merger activity can resume in earnest. Consolidation is an inevitable consequence of market maturity, whether it's consumer goods or automobiles. But the trend has always felt a little uncomfortable in the computer industry, which clings stubbornly to the notion that any two guys in a garage can grow up to be Hewlett-Packard.

The reality, though, is that those days are gone. In my meetings with computer entrepreneurs of late, I have noted that

Consolidation is an inevitable consequence.

no one seems very committed to going it alone any more. You build your company to \$50 million or more and then either sell out or go public and then sell out.

The Internet provided a break in the routine. But none of the major Internet companies that emerged in the past couple of years threatens to challenge the industry order. Most likely they will be acquired before themselves.

That suggests that buyers should take a cautious attitude toward dealing with the industry's young bucks. Not that you shouldn't take them seriously, but be aware that at some point down the road these companies are likely to be owned by someone else. Expect a lot more industry consolidation this year. The big players are only going to get bigger.

Paul Gillin, Editor
Internet: paul_gillin@cs.com

THE FIFTH WAVE BY RICH TENNANT



"THAT'S A LOVELY SCANNED IMAGE OF YOUR SISTER'S PORTRAIT. NOW TAKE IT OFF THE BODY OF THAT PIT VIVER BEFORE SHE COMES IN THE ROOM."

Email Rich Tennant at rtennant@the5waved.com

Channel conflicts stall Web sales

► For some, potential business isn't worth alienating distributors

By Sharon Machlis

ALMOST HALF of all auto dealers see the Internet as a threat to the traditional franchise system, according to a recent survey.

And software vendors have been slow to sell online for fear of angering key distributors.

Some traditional players in those and other industries have been reluctant to push electronic commerce because they don't want to upset sales channels in their back-and-forth world—even in the face of Internet-based competition.

Full-service brokerage houses, for example, are reacting to the rise of World Wide Web competition "like deer caught in the headlights," said Bill Burnham, a senior research analyst at Piper Jaffray, Inc., in Minneapolis. "If they do embrace the Internet, they risk alienating the brokers who are responsible for generating 9% of their revenue," he said. Yet 17% of all retail stock trades last year were Internet-based, and that number is expected to rise.

"Any industry where dissemination of information was the value-added" is likely to be shaken up by the Internet, said Jill Frankel, an analyst at International Data Corp. in New York. "It's really empowered consumers. There's a lot of things that they had to use others for [that they can now research themselves]."

Among the worried industries: auto sales, financial services, travel and insurance. "The Internet has become the middleman," Frankel said.

KEEPING THE PEACE

Several electronic-commerce executives said they have to keep channel conflict in mind.

"It clearly is an issue of concern for [travel] agents. It should be," said Terrell Jones, president of The Sabre Group's Sabre interactive travel service on the Internet.

Online travel sites give consumers schedules and bargain information across multiple airlines—something only travel agents used to be able to do. But when consumers book flights on the Travelocity Web site, the ticketing is done through a contract travel agent in order to

keep the channel involved.

With 86% of all U.S. airline travel booked through travel agencies, Jones said, "supporting the channel is very important. The Web is important, but it's pretty small."

ROOM FOR TWO

Intuit, Inc., the Mountain View, Calif., maker of the popular Quicken financial software, sells its products on the Web as well as in stores.

Although one of the chief attractions of Internet selling is supposed to be lower prices, Intuit's prices on the Web are "actually a little higher because of some of the discounting that goes on at retail," said Alan Gleicher, Intuit's senior vice president.

"We don't want to disrupt the channel so [retailers] feel that we are competing with them," Gleicher said.

Several retailers with both traditional and online presences said they don't worry about their Web sites cannibalizing sales from their regular stores. They said the main goal is to increase sales, from whatever channel.

"We don't want to disrupt the channel so [retailers] feel that we are competing with them."

—Alan Gleicher, Intuit

Barnes & Noble, Inc. has seen record revenue at its real-world stores in the eight months since its online store was launched.

'NET IMPACT FACTS

■ Online shoppers who have made a purchase on the Web: 58%

■ Does electronic shopping eliminate the need to go to a store? 77% agree

Source: 1200 online consumers

Source: Ernst Marketing Association, New York

said Susan Boster, director of marketing strategy and communications. Bookelling on the Web "is expanding the book market and expanding interest in books," she said.

And CompuUSA hopes to take advantage of having both stores and an online site to offer consumers maximum convenience. So, if something's wrong with a computer bought online, customers don't have to box it up to ship back—they can bring it to the nearest store, said Ken Knighton, senior director of electronic commerce.

TIME TO THINK

Many businesses have time yet to sort out how electronic commerce might threaten conventional sales channels. "It's going to be a long time before any industry sees a majority of its revenue" come from the Web, said Nicole Vanderbilt, an analyst at Jupiter Communications, Inc. in New York.

"There's no way retail is going away," Gleicher agreed. Still, he said, "electronic commerce is going to grow exponentially. There will be a lot of issues that need to be understood." □

Senior editor Thomas Hoffman contributed to this report.



Zen and the art of cutting PC costs

By Laura DiDio

NOVELL, INC. last week announced Zenworks, a NetWare add-on that automates administrative chores such as desktop PC management and software distribution.

The goal is to reduce the total cost of PC ownership by managing PCs at the network server, rather than having technicians visit each desktop.

Zenworks has snap-in software modules that run on top of NetWare. It lets businesses leverage the Novell Directory Services (NDS) database to automate such tasks as policy-enabled software distribution, desktop management and local and remote workstation maintenance.

Users and analysts familiar with the beta release gave Zen-

works high marks for ease of use, installation and its potential to dramatically reduce the time and costs of routine tasks.

"The best business case for Zenworks is that it lets us consolidate information about all our users, network resources and devices centrally in NDS," said beta tester Scott Webster. He is a senior network analyst at Canadian Occidental Petroleum Ltd. in Calgary, Alberta.

Prior to that, Webster said, his administrators had to search for information in several locations, using tools from several vendors.

"It was a cumbersome, time-consuming process that certainly inflated our total cost of ownership. While I can't quantify the exact dollar amount we'll save, I'm anticipating that Zenworks will cut our management

time for certain tasks like software distribution and support for remote users by 50%," he said.

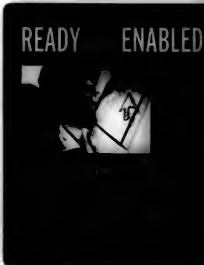
NO PANACEA

Josh Turflet, information services manager at Ad Life Marketing, Inc. in Norwood, Mass., said he is skeptical that Zenworks alone will make a big dent in administrative costs.

"The promise of zero administration is network nirvana to all of us. But it's just about as difficult to achieve as it is to reach nirvana," Turflet said.

"But NDS is an ideal framework for users to begin consolidating management tasks," he said.

Besides lightening the administrator's workload, Zenworks also offers businesses the option of allowing end users to customize their desktops — which administrators view with



some trepidation.

"We'd use Zenworks to give our end users a degree of freedom on how their individual interfaces look, but our MIS de-

partment will retain a tight control over core desktop functionality," Webster said.

Pricing for Zenworks hasn't been set. □

Vendors promise tools to integrate apps, middleware

► Tibco to roll out product that works on top of messaging middleware

By Craig Stedman

THE RACE IS ON to ease the linking of corporate applications with message-oriented middleware, making it less of an uphill slog for users.

Until now, companies that use middleware plumbing such as IBM's MQSeries were largely left to their own devices when it came to building links between different systems. But IBM and other vendors finally are prom-

ising to ease the pain of integrating incompatible applications.

For example, Tibco Software, Inc. this week plans to announce a set of automated integration tools that work on top of its messaging middleware. Included are a message transformation and routing engine and a series of adapters with prebuilt links to packaged applications such as SAP AC's R/3.

Tibco's rollout follows a deal announced earlier this month under which IBM will package MQSeries with application integration tools developed by New Era of Networks, Inc. (NEON) in Englewood, Colo.

Both the Tibco suite and the IBM/NEON bundle are due in the second quarter.

Koch Industries, Inc., a \$15 billion conglomerate in Wichita, Kan., is installing Tibco's software in its trading business as a prep for distributing market data and linking applications. The upcoming TIB/ActiveEnterprise tools are exactly what Koch needed to make it work, said Greg Yarbrough, director of trading integration services.

"We've got applications that

are pretty stovepiped, and this gives us the ability to expose them to the rest of the world without requiring immense amounts of expertise or re-engineering," Yarbrough said.

STAYING SAME

For users who need to knit together applications into a coherent enterprise whole, the ques-

ing and asynchronous communications features of message-oriented middleware make it "the only sane way to go," said Ed Acly, an analyst at International Data Corp. in Framingham, Mass.

The rub has been that users had to manually build middleware books into their applications. That can be costly, time-consuming and frustrating because many of the applica-

tions being tied together are hoary mainframe programs that aren't easy to update, Acly said.

Tibco, a Reuters Holdings PLC unit in Palo Alto, Calif., initially is releasing new application monitoring software. Its message broker, a companion file routing engine and an SAP R/3 adapter are due by midyear. Other application adapters will follow later in the year, Tibco officials said. □

"We've got applications that are pretty stovepiped, and this gives us the ability to expose them to the rest of the world without requiring immense amounts of expertise."

— Greg Yarbrough, Koch Industries

Intel is late entry in Gigabit Ethernet race

By Bob Wallace

CHIP SUPERPOWER Intel Corp. last week confirmed plans to showcase its first Gigabit Ethernet products later this month.

Intel sees the products and additional networking equipment that will follow as pieces it needs to become a complete network hardware vendor.

But the crowded market is dominated by Cisco Systems, Inc., 3Com Corp., Cabletron Systems, Inc. and Bay Networks, Inc.

San Jose, Calif.-based Intel

will unveil a Gigabit Ethernet adapter card for servers and a switching module for the 350T, a 24-port 10/100M bit/sec switch. Also due is a Layer 3 switch with Gigabit Ethernet capabilities.

Gigabit Ethernet technology was designed to break up bandwidth bottlenecks in campus backbone networks.

LOOK, BUT DON'T TOUCH

An Intel spokeswoman emphasized that the products will be shown, but not announced, at a media event in San Francisco Feb. 24. She wouldn't pro-

vide availability or pricing details.

Intel, which is best known for chips, adapter cards and small-business networking products, faces big challenges selling high-end Gigabit Ethernet products.

"They'll be pitted against the giant Big Four networking companies as well as many aggressive start-ups who have been shipping systems for months," said an analyst who requested anonymity.

"Saying Intel faces an uphill battle is a massive understatement," the analyst said. □

Companies used the Army know-how as change project management at Bank of America from an informal process to a cultural force. **Manning, page 65**

Ron Griffin is adding executive users and rebuilding IS to keep up with growth at Home Depot. **Corporate Strategies, page 41**

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Year 2000 problem also threatens E-mail

By Barb Cole-Gomolski

CHALK UP another sort of legacy system with year 2000 problems: electronic mail.

Some older E-mail systems, mail gateways and directories will have trouble handling the year 2000. That means companies must upgrade to new versions of products that already are on their last leg or migrate to new E-mail systems.

Gartner Group, Inc. in Stamford, Conn., estimates that 90% of E-mail products shipped before last year won't work right when they encounter dates beyond 1999. The result could be missorted or rejected messages.

Many large companies have migrated to client/server messaging or Internet mail in the past few years, but some companies still have pockets of legacy systems.

Mainframe-based mail systems, X.400 mail switches and directories are most likely to have year 2000 problems. And versions of Lotus Development Corp.'s CC-Mail that have a database called DB6 will have to be upgraded, because the software will delete and misroute messages after 2000.

HOT THERE YET

Milwaukee-based Northwestern Mutual Life Insurance Co. recently had to upgrade a mainframe-based system from Fischer International, Inc. in Naples, Fla., because the version it was running wasn't year 2000-ready, said Mark Chrobak, a senior systems analyst at Northwestern Mutual.

Mike Gentile, vice president and director of information technology at Zurich American Insurance Group in Schaumburg, Ill., said he will move 5,000 users from CC-Mail to Notes this year rather than invest more money in CC-Mail.

The insurer had been looking to get off CC-Mail for awhile, but the year 2000 problem was the last straw, Gentile said.

Analysts warned it may be impossible to ensure that a corporate E-mail system is completely year 2000-compliant, even after a company determines that all its messaging software is safe. It may receive E-mail with two-digit dates.

"Some E-mail systems might reject such messages," said Joyce Graff, an analyst at Gartner Group.

It may be impossible to ensure that a corporate E-mail system is totally year 2000-compliant, analysts warn.

It also is unclear how E-mail systems will sort messages stored in folders and how directories will handle updates, which are usually processed in the order in which they come in.

"I have all my old messages stacked up in files, so when the century turns, will they be in the right order?" asked an MIS director at a telecommunications company in New Jersey.

The so-called janitor utility found in many mail systems—which automatically deletes messages after a certain, user-specified date—also may be a problem, Graff said.

Paul Hoffman, chairman of the Internet Mail Consortium, an industry group in Santa Cruz, Calif., said Internet mail systems will fare better than their proprietary counterparts.

"None of the current Internet mail protocols have [year 2000] problems," he said. "But all bets are off for proprietary [E-mail] software." □

UPGRADES ON THE WAY

These messaging products may have year 2000 glitches:

- Mainframe-based mail software
- Older directories
- Messaging switches based on the X.400 standard
- Other proprietary message stores and switches
- Some older LAN-based E-mail systems



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team that is experienced in all aspects of year 2000 compliance. After all, as the world's leading independent software company, we have more experience re-engineering legacy applications than anybody. And with a 21-year track record of success and over \$4 billion in revenue, our clients know we'll be around long after the year 2000.

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FRANKLY SPEAKING

Ode to inefficiency

FRANK HAYES

WANT TO HEAR something dumb? Something almost criminally stupid?

A widely used security system that controls the doors at many airports, jails, banks, high-tech companies and government buildings — including CIA offices — may not be so secure. The reason: IS shops have added modems and network connections that make it possible for outsiders to break in to the computers that control the systems, according to news reports last week.

As a result, intruders could create their own electronic badges to enter high-security areas at will without leaving a trace. In other words, those IS users have literally opened their doors to terrorists, jail-breakers, thieves and industrial spies — an unmitigated disaster.

Now there's a major impact IS can have on the business!

What's ironic is that the IS people who opened those huge security holes weren't stupid. They were smart — smart enough to know that computers communicate a lot more efficiently when they're hooked into a network.

They just weren't smart enough to see that, for once,



The IS urge to make things efficient can demolish systems' effectiveness.

efficiency was a bad idea — to understand that a computer controlling security does its job a lot more effectively when it's physically isolated, intentional-

ly disconnected from the rest of the computing world.

Security isn't the only place we make things more efficient and, as a side effect, demolish their effectiveness. The year 2000 problem is a classic case — efficient use of data storage that ultimately renders whole systems useless.

But it happens in little ways, too, almost every day. How often do we tell users that something can't be done — when it could be done, except that it would make things more difficult, harder to manage or less efficient for IS?

We love efficiency because it's easy to measure — lines of code per programmer-month, problems cleared per week by the help desk. We punish inefficiency because, well, efficiency seems obviously so much better. But things aren't quite so simple in the real world. And those real-world consequences can take a toll on your business.

For example, it's efficient for sales clerks to handle as many customers as quickly as possible. But that may not sell the most goods and ring up the largest receipts at day's end. An effective salesperson may spend a little more time to make a larger sale to each customer.

And effective systems that support those salespeople may require the abili-

ty to backtrack, change quantities at random and replace one product with another on an invoice. That can make for indecent, overly complicated applications that aren't efficient to create and maintain — but are what users need.

Or maybe your users need real-time messaging or other network-intensive capabilities. That can make network management a nightmare for IS — although it makes users much more effective.

How do you break through to deliver that extra boost of user effectiveness? You have to pay attention to users, learn how they work and what they want.

More than that, IS must understand what users need. They don't know what's possible, what it will cost and what trade-offs will be required. We do — or, at least, we're in a better position to figure it out.

Building and running information systems that are really effective for users takes all an IS shop's imagination, skill, knowledge and effort. That may not be very efficient for IS. And missing that opportunity may be an unmitigated disaster for users.

But it sure would be dumb. □

Hayes is Computerworld's West Coast bureau chief. His Internet address is frank_hayes@cw.com.

SHORTS

If you meet, will they come?

What if senators held a hearing and nobody came? The Judiciary Committee has asked Microsoft Corp. CEO Bill Gates, Sun Microsystems, Inc. CEO Scott McNeely and Netscape Communications Corp. CEO Jim Barksdale to testify at a hearing on competition in the software industry. The hearing is scheduled for March 3. But officials at the companies said the chiefs may not show up. Gates has a previous commitment, so another Microsoft executive will appear. Netscape said Barksdale is unlikely to testify without Gates in the room. And McNeely's spokeswoman said he is interested but undecided. Sen. Orrin Hatch (R-Utah), the committee chairman, has expressed concern about Microsoft's marketplace dominance and is looking at competition in the computer industry.

Informix returns to black

Informix Software, Inc. surprised Wall Street by moving back in the black after three straight quarters of losses and a financial restatement dating back to 1994. The Menlo Park, Calif., database vendor reported a fourth-quarter profit of \$9.3 million compared with a reported \$7 million loss the year before. The renewed profitability came about despite a 16% drop in the company's revenues, which was \$181.2 million. For 1997, Informix reported a \$58.8 million loss on revenue of \$665.3 million.

Symantec denies charges

Symantec Corp. last week denied that it swiped code from competitor CyberMedia, Inc. for its uninstall product, CyberMedia, in Santa Monica, Calif., on Feb. 5 filed a copyright infringement suit in which it claimed that Symantec, in Cupertino, Calif., lifted code from

CyberMedia's Uninstall program for use in Norton Uninstall Deluxe. Enrique Salas, a Symantec vice president, said some similarities CyberMedia highlighted are a result of using Microsoft's widely implemented application development tools.

QuickTime backed for standard

The International Standards Organization adopted Apple Computer, Inc.'s QuickTime file format to develop a standard for multimedia broadcasts over the Internet as well as other networks. QuickTime was chosen as the starting point for MPEG-4, the next Motion Picture Expert Group specification, because it is the format most commonly used today for storing and transmitting audio/video content, industry officials said.

Microsoft in Web server deal

Microsoft and NetDynamics, Inc. last week inked a pact that calls for NetDynamics to support Microsoft's Java Virtual Machine on the next version of its World Wide Web server.

Check Point takes VPN path

Leading firewall provider Check Point Software Technologies Ltd., this week will unveil its virtual private network (VPN) product road map for this year. Its virtual networking products will be equipped to include Certificate Authorities/Public Key Infrastructure (CA/PKI) technology, 100M bit/sec. hardware encryption acceleration and fully integrated bandwidth management. Check Point, in Redwood City, Calif., will release versions of its FireWall-1 VPN server software and Secure Remote client remote access software that provide integrated CA/PKI capabilities. Both of those products will be out in the second quarter.

Calders pursues DOS suit

Calders, Inc. got court approval to amend its antitrust complaint against Microsoft to include evidence that the Redmond, Wash., software company aimed to knock out competition for the MS-DOS operating system by tying it to Windows 95. Calders can ask the federal court in Salt Lake City to consider Microsoft's market shares in Windows 95, Windows 3.1 and MS-DOS to calculate the effect on the computer industry and possible financial damages, according to a statement from the Provo, Utah, company. Microsoft denied the charges, saying they were "a rehash of tired old allegations."

AltaVista E-mail service

Digital Equipment Corp. said users of its AltaVista Web search engine (www.altavista.digital.com) can now use a free electronic-mail service offered by Digital and iMime, a division of New York-based E-mail technology provider GlobeComm, Inc.

SHORT TAKES The World Wide Web Consortium has adopted the Extensible Markup Language as a recommended standard for Web document formats. ... Ron Pepler, 41, former CEO of Tandem Computers, Inc. and most recently an executive vice president at Compaq Computer Corp., has joined Philips Electronics N.A. in The Netherlands. ... IBM said it would bid for Compaq's Quest Technology, Inc. in Encinitas, Calif., so the companies can jointly develop information appliances using IBM's semiconductor technology and privately hold Compaq's chip design experience. ... Microsoft last week said the final version of its Outlook 98 messaging and collaboration client will ship by the end of March. Pricing hasn't been announced.



The data warehouse
partners you choose
could have a profound
effect on your career.



ORACLE



RED HAT

ENTERPRISE SERVICES

CA bid for services expertise hinges on keeping CSC staff

By Patrick Dryden

IF LAST WEEK'S \$9 billion bid to engulf the bigger Computer Sciences Corp. (CSC) succeeds, Computer Associates International, Inc. must scramble to keep from choking on the deal, analysts said.

Like other vendors courted enterprise customers, CA needs a field force that can make products work right in complex environments. The resulting software/service company would employ 50,000 worldwide with revenue around \$1 billion.

CA is "real anxious" and

client/server systems smoothly," said Kathy White, chief information officer at Allergiance Healthcare Corp. in McGaw, Ill. "The fewer vendors the better, since it's a real problem sorting out responsibilities."

But CA's goal may backfire, and CSC customers may suffer if CSC experts cash out or flee a hostile takeover, analysts said. Top management left when CA acquired Chryseum Software, Inc. last year, some said, although CA officials claim to have retained all employees.

"If the same thing happens with CSC, customer relationships go in the tank," said Patrick McBride, a vice president at Meta Group, Inc. in Westport, Conn. "CA must figure out how to silver-handoff CSC managers or else the company will bleed badly."

The turnover risk is great because the skills of employees at CSC and other service providers are in such high demand, said Ray Paquet, a research director at Gartner Group, Inc. in Stamford, Conn. "Besides, even if CA says they want you, it's tough to stay when your friends start leaving," he said.

Clashing corporate cultures and management styles also

THE PLAYERS AT A GLANCE

Computer Associates International, Inc.
Istanbul, N.Y.
www.cai.com

Business: 500 software products (databases, management, development, manufacturing, financial) and some services

Employees: 11,000

1997 revenue: \$4 billion

Computer Sciences Corp.
El Segundo, Calif.
www.csc.com

Business: Management consulting, IS consulting and integration, outsourcing and some software products

Employees: 44,000

1997 revenue: \$6.3 billion

should concern CSC customers, prospective customers and employees, said Bill Martorelli, a vice president at Giga Information Group in Cambridge, Mass.

CULTURE CLASH

"CA has improved its forceful image quite a bit, but CSC has a friendlier style," Martorelli said. "Skepticism is legitimate with any acquisition, but CA must go further than just promising not to lay off people."

Also, CA concentrates management power in one small core while CSC disperses power through a decentralized structure, analysts said.

Because CA is "short on management bandwidth," McBride said, it must keep CSC management in place. Maintaining steady service to existing customers will be tough, he said, because CSC "bit off more [contracts] than it could chew this past year, so it already is stretched thin on execution."

Another concern is that CA's

fundamental business would change overnight.

"CA managers clearly have shown they know how to run a software company, but it's a different challenge to run a service organization," said Paul Marfen, a director at International Data Corp. in Framingham, Mass.

CA went public with its offer last week, claiming that negotiations began in December stalled over the value of CSC.

That isn't true, according to Van Honeycutt, CEO, chairman and president of CSC.

"While there have been two brief meetings at CA's request, any suggestion that there have been negotiations or agreements between the two companies is absolutely false," he said.

Wang and Sanjay Kumar, CA president and chief operating officer, said they hope they can work with CSC through a negotiator, but they wouldn't rule out alternatives such as taking the offer of \$100 in cash per share to CSC shareholders. □



"We have found ourselves out of our partner."

That's because CA stands to lose much of CSC's management, expertise and customers in its headlong rush to deliver service as well as software, analysts said, leaving the merged company as nimble as a python that swallowed a pig.

wants to move quickly, said Charles Wang, chairman and CEO of CA in Ithaca, N.Y. "This will put us in better position to compete with IBM and others with end-to-end service."

"This could really expand what CA can bring us to run

Objectivity key

CONTINUED FROM PAGE 1

last week don't look too bad to potential customers.

But for users who want some technology guidance, the marriage of products and consulting services may mean the advice they get is less than objective. And that would be a problem, according to information technology executives interviewed by Computerworld.

"There's no question that integrating software is a huge issue for all sophisticated IT shops," said Brian Kilcrease, chief information officer at Longs Drug Stores, Inc. in Walnut Creek, Calif. "Drop-and-run software [vendors] just don't cut it for us."

Things get more sticky if you look beyond implementation services, he said. "When a large

consulting firm aligns itself so closely with a specific product, the assumption I'm making is they will lose their objectivity rather quickly," he said. "That's the big question for CA."

LESSON LEARNED

Visa International, Inc. learned firsthand about the potential pitfalls of such close ties. One of its business units brought in IBM's services unit six months ago to build an application that was supposed to use non-IBM hardware. But IBM came back with a design based on its RS/6000 server, saying it could deliver the project faster that way.

"And the business was so anxious to get what they needed that they took it," said John Valente, senior vice president of

Visa's information applications division. The San Francisco-based credit-card consortium expects to switch the application to more powerful hardware over time, he added.

Services and consulting take up more than one-third of an average IT budget, which makes them lucrative nuts for technology vendors to crack.

Forester Research, Inc. in Cambridge, Mass., predicts that the worldwide IT services market will be at more than \$50 billion within four years. And so

of the 50 IT executives surveyed by Forester said they expect their services budgets to increase this year and next.

That is fueling a widespread movement in the enterprise sector toward a heightened focus



Visa's John Valente said services units could be just another product channel for vendors

on services, consulting and out sourcing. CA is just the latest vendor to catch the bug.

For example, IBM has made its services business the biggest in the industry. And the \$9.6 billion purchase deal Compaq Computer Corp. inked with Digital Equipment Corp. last month was said to be heavily driven by Compaq's need for a services unit to boost its enterprise status. Digital CEO Robert Palmer previously had announced plans to make services the strategic core of the company.

In many ways, analysts said, the rush to the services business is driven by users who don't have the budget or the people to install complex technology such as packaged applications and enterprise management software.

"No one wants to do a root canal on themselves," said Tom Rodenhauer, editor of the "Consultants News" newsletter

ENTERPRISE SERVICES

Services the big attraction

By Craig Steidman and Randy Weston

THE ALLURE of services and consulting to enterprise vendors such as Computer Associates International, Inc. and Compaq Computer Corp. can be summed up in two words: account control.

Services are becoming a central part of technology buying decisions, industry analysts said. And big vendors that don't have them are at a disadvantage.

"The rules of the game for buying technology are being changed," said Bob Djurdjevic, an analyst at Annex Research

in Phoenix. "And when it starts to hit you in the pocketbook and you see control of your accounts slipping away, reality sets in."

Even vendors that don't want to take a

whack at the full range of professional services are getting more involved in consulting. For example, Denver-based J.D. Edwards & Co. last week announced plans to offer outsourcing deals related to its packaged applications (CW Feb. 9).

To Gary Thomson, vice president of information systems at Choice Hotels International, Inc., the idea of vendors

taking a more active post-sales services role has merit.

Choice bought help-desk software through a reseller. But the reseller "just doesn't have the right resources to [implement] it himself," Thomson said. "I would love to have the vendor here so we could get our hands around their neck and get them to do it right." □

AT YOUR SERVICE

Where the enterprise vendors stand in the service business

Company: Digital Equipment Corp.
1997 total revenue: \$13.1 billion
% from services: 45% (\$5.9 billion)
Major customers: Dow Chemical Co., Swiss Telecommunications

Company: Hewlett-Packard Co.
1997 total revenue: \$42.9 billion
% from services: 14% (\$6.2 billion)*
Major customers: U.S. Cellular Corp., Snap-On Tools, Delta Air Lines, Bell Atlantic

Company: IBM
1997 total revenue: \$78.5 billion
% from services: 33% (\$25.7 billion)**
Major customers: Prudential Insurance Co. of America, Washington Mutual, A.M. Steel, Lucent Technologies

*Includes service and support from HP's non-computer business

**Includes service and maintenance

in Fitzwilliam, N.H.

But the downside is that vendors may treat services units as a Trojan horse for selling products, he added.

That's what concerns Kilcourse and other users.

Such an approach would be "extremely shortsighted," said Kent Nunn, CIO at Farmland Industries, Inc., a \$10 billion farmers co-operative in Kansas City, Mo. "Large customers are not going to sit still for that kind of blackmail."

Gary Thomson, vice president of information systems at Choice Hotels International, Inc.'s data center in Phoenix, knows what it looks like from the other side of the table. Before joining Choice six years ago, he worked as a consultant at AT&T.

"When we were talking about databases, people felt a whole lot more inclined to listen to us than when we started talking about our own stuff," he said. "They just figured we were biased toward that." □

National correspondent Julia King and staff writer Randy Weston contributed to this report.

Non-disruptive Instant Point in Time Storage Backup

EMC TIMEFINDER™ AND FDR™ INSTANTBACKUP™ WORKING TOGETHER...

EMC TimeFinder BCV option allows you to create exact duplicates of your existing DASD volumes.

FDR InstantBackup allows you to back up the BCV volume, which contains an image of the primary volume that was frozen at any point in time that you choose. Backup of the split BCV volume will take place while the original disk volume remains on-line, available for normal use and update.

WITHOUT FDR INSTANTBACKUP

- Split BCV from Primary Volume A
- Relabeled OR Inx BCV as Volume B
- Vary Relabeled Volume B On line
- Backup Volume B
- During Restore: User Must Bx. Await That Backup of Volume B is Really Volume A

WITH FDR INSTANTBACKUP

- Split BCV from Primary Volume A
- NOT REQUIRED
- NOT REQUIRED
- Backup Volume A (ie BCV Volume)
- No Special Restore Considerations

Relabeling volumes is an administrative nightmare. It may be difficult to identify the backup of relabeled BCV Volume B as a backup of Volume A. While Volume B is online, having a VVDS with a name that does not match the volume serial may cause problems with SMS and VSAM, and reporting and capacity analysis tools will report that data sets on the BCV volumes are uncataloged.

NON-DISRUPTIVE FULL-VOLUME BACKUP

Example of how to perform a non-disruptive full-volume backup:

```
//FDR EXEC PGM=FDR,REGION=0N
//DISK1 DD DSN=FDR,USE=UNIT01,FB
// UNIT=3390,VOL=SER=RV6001,DISP=OLD
// DISP TYPE=FDR
```

Triggers FDR to backup offline BCV rather than the primary volume.

During this FDR backup of the BCV volume data sets can be allocated, scratched or go into extents on the primary volume without any effect on the backup of the BCV volume!

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Risk management still a wild frontier

By Thomas Hoffman
New York

IN THE RUSH to deploy client/server and Web-related technologies — and perhaps gain competitive advantage or generate higher revenue along the way — few companies stop to consider that those systems expose them to some operational and financial risks.

Hardly any companies have a fully integrated approach to managing all their information technology and business risks together, said Paula Sinclair, a senior editor at The Economist Intelligence Unit based here.

And most companies that do manage and monitor their IT risks do so with a "fragmented" approach, said J. P. Morgan & Co. managing partner at Arthur Andersen & Co.'s Computer Risk Management practice in Chicago.

Gates, who announced the results of a survey on the topic at a conference here, added that most of those companies use products such as Computer Associates International, Inc.'s Unisenter TNG systems man-

agement software to identify operational malfunctions.

The survey, which examined management of IT risks, found that more than two-thirds of the more than 150 CEOs, chief financial officers and chief information officers at global companies surveyed by Arthur Andersen and The Economist Intelligence Unit admit that IT risks aren't well understood at their companies. Meanwhile, only one to three executives said their companies have methods to determine risk.

Firms represented in the report include J. P. Morgan & Co. in New York, Capital One Financial Corp. in Falls Church, Va., and Mitsubishi Corp. in Tokyo. One common problem is that few companies have made any effort to anticipate problems that may arise following system deployment.

For example, security is an oft-mentioned threat to electronic-commerce initiatives. Yet

few cyber-ready companies can determine what impact faulty connections and inaccurate data might have on customer retention, Gates said.

Both Gates and Sinclair were unable to estimate the total dollar value companies jeopardize with lax risk management practices. However, one firm

Fidelity's James C. Lam.

A risk management project led to a decline in loss-to-revenue ratio.

recently cited example in financial services is London-based Barings PLC, which nearly went bankrupt in 1995 after rogue trader Nicholas Leeson circumvented the bank's risk management monitors and lost hundreds of millions of company dollars in the Asian markets.

Barings and other high-profile trading firms in the mid-1990s prompted Fidelity Investments to Boston to launch an integrated, companywide risk management program in 1995.

As part of its three-year effort, orchestrated by chief risk officer James C. Lam, Fidelity is beta-testing an intranet-based "push" technology system that will send electronic warning flags to the company's top 100 senior executives whenever trading losses pass predetermined thresholds, Lam said.

Lam wouldn't say how much privately held Fidelity has spent to develop the push-based risk management system, which are expected to be fully deployed by June.

Although the homegrown systems were "not inexpensive" to build, continuing efforts to integrate the company's information systems division and 40 business units have led to a decline in the company's loss-to-revenue ratio, Lam said.

Crisis management, he said, "is a lot more expensive and embarrassing" than risk management. □

PDAs look for respect

By Kim Girard

INFORMATION SYSTEMS departments have long considered handheld computers mere toys for the gadget-happy and have been reluctant to spend scarce dollars on the devices.

Getting IS departments to take the handheld seriously — and picking the right mobile platform — will be discussed at this week's Mobile & Personal Digital Assistant (PDA) Expo in San Francisco.

"[The handheld] hasn't been looked upon as a functional tool. Until you can provide proof, it's going to be a hard sell," said George McQuillister, mobile

"The [handheld] hasn't been looked upon as a functional tool. Until you can provide proof, it's going to be a hard sell."

— George McQuillister
Pacific Gas

computing product manager at Pacific Gas & Electric Corp. and president of the PDA Industry Association in San Francisco.

PALMPILOT SUCCESS

But McQuillister, whose company is deciding on a handheld standard for its support staff, said the popularity of the versatile, easy-to-use iGrom Corp. PalmPilot has helped boost the handheld's profile.

Analysts agree that firms — impressed by the PalmPilot, the growth of Windows CE devices and lower prices for wireless service — are giving handheld devices a second look for connecting road warriors to E-mail, the Internet or corporate LANs.

"While handheld keyboards remain small and awkward to use, handwriting recognition has improved and vendors have added color screens and better printing capabilities to make the devices more attractive to users."

"People spending more than 30% of the time out of the office are 20% less productive than people who spend 90% of their time on a LAN," said Bob Egan, an analyst at Gartner Group, Inc., a research company in Stamford, Conn. □

IBM teams with Java for Olympic Games success

► Big Blue shoots for the gold with Web site

By Sharon Gaudin and Rob Gach
Nagano, Japan

WITH MILLIONS of viewers watching, IBM and Java are trying to set new records at the 1998 Olympic Winter Games here.

And the stakes are high for both.

"It's an incredible risk they're taking," said Enzo Quinn, an analyst at International Data Corp. in Framingham, Mass. "It's one thing when your entire system goes down behind corporate doors. It's another when you build an enterprise system for the whole world to see. That's scary."

IBM, the Olympic Committee's sole information technology partner this year, is familiar with that risk.

The computer giant suffered some

highly publicized glitches at the 1996 Summer Games in Atlanta with a slow World Wide Web site and a system that spit out garbled information to the press.

This is the year IBM hopes to get back in the medal round. And Big Blue is competing in every event. IBM is handling everything in Nagano, from the Olympic Web site and athlete accreditation to press feeds, re-

sults and commentator backup. Unlike two years ago, IBM was set up and ready to go with most of its systems early last year.

STAFFED UP

IBM is trying to cut its risks even further. It set up three server sites in the U.S. and one in Japan to handle Internet traffic, has 50 developers working around the clock on the Web site. 600 IBM employees running the systems in Nagano and technical staff stationed at each sporting venue.

And it is definitely showing time for Java, which has suffered its own embarrassments in contexts of speed.

IBM is feeding sports enthusiasts around the world real-time result postings on the Web site. Some industry observers have called it the largest site ever built, taking 51.7 million hits on Feb. 11 alone.

For example, when the U.S. hockey team is play-

ing, a user can go to the Event Chooser, click on a button and see real-time statistics, such as penalties and goals, as well as photos of the game in play.

When Picabo Street, a member of the U.S. Olympic ski team, won her gold medal in the Super G race last week, her photo and times were posted within a minute of the official announcement.

IBM uses a Java applet to make it work. "If we had built the whole site with Java, we would have been nuts," said John Chiavelli, IBM's manager of the Olympic Internet Systems.

"But it's perfect for this. It dynamically pushes the information out to the user. Nothing else could do that," Chiavelli said.

And so far, so good. There has been no interruption on the Web site, results have been posted steadily, and there hasn't been a noticeable slowdown in the systems. But the pressure won't be off until the final ceremony is over. □

Guth writes for the IDG News Service in Tokyo.



IBM's Web site will feed sports enthusiasts real-time result postings

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Where do you want to go today? **Microsoft**

Microsoft trips on thin client

► Missing focus, technology bothers users

By Laura DiDio and April Jacobs

MICROSOFT'S thin-client Hydra strategy is looking fat and sloppy.

The much-hyped rollout of Microsoft Corp.'s Windows Based Terminal Server software — due in the second quarter — is mired in confusion and tripped up by missing technical pieces, according to IT users and analysts interviewed last week.

"So far, Hydra's not a pretty picture," said Paul Aldridge, a senior research investigator at Pitz, Inc., a pharmaceutical firm in Grafton, Conn. "I'm not clear just what Microsoft's thin-client strategy is, and Microsoft hasn't articulated Hydra's technical components sufficiently for us to determine whether it's a good fit for us."

Hydra is supposed to give Windows NT Server the ability to serve 32-bit Windows-based applications to terminals and terminal emulators running on PCs. In theory, it would lower businesses' total cost of ownership, reduce network complexity and ease management burdens because all application

processing occurs on a central server.

Analysts said Microsoft is promoting its Hydra thin client to thwart the impact of competing network computer technologies from rivals such as Sun Microsystems, Inc.'s JavaStation and IBM's NetStation.

"One of Microsoft's unspoken agendas is to clearly squash any attempt by network computers to proliferate at the expense of its core Windows technology," observed Greg Blatnik, an analyst at Zona Research, Inc. in Redwood City, Calif.

Hydra must also overcome some major caveats, which have shown up in beta versions of the product. They include the following:

- Potentially huge memory requirements: a minimum of 32M bytes on the Windows NT and Hydra server plus 4M to 8M bytes of server memory for every user application.

- No information from Microsoft yet about packaging, licensing and pricing.

- Performance problems with the proprietary Remote Desktop Protocol (RDP), which cause it to consume too much bandwidth and slow data throughput.

width and slow data throughput.

Hydra requires the forthcoming Picasso software from Citrix Systems, Inc. to add key components such as access to non-Windows-based systems, security and load balancing. Users must purchase Picasso as a separate add-on product.

FIXES COMING

John Fredericksen, Microsoft's Hydra group product manager, last week said the performance problems will be resolved in the Beta 2 release due next month (see story at right).

Particularly worrisome from a technical standpoint is that while Microsoft has licensed Citrix's WinFrame thin-client technology to include in Hydra, the Redmond, Wash.-based vendor has opted to replace the underlying Citrix ICA protocol with its own RDP (formerly called T-Share).

The apprehension surrounding that decision has been evident in field reports from some of the 1,100 Hydra beta testers. They have complained vociferously on various Microsoft forums and user groups that RDP consumes far too much bandwidth and thus transmits data much more slowly.

Joe Poniatowski, administrator of system and network technologies at Standard Register Co. in Dayton, Ohio, is worried that Hydra might raise, not lower, total cost of ownership.

"We wonder: Is Microsoft go-

ing to charge us for every user and Citrix also charge us for Picasso?" Poniatowski said. "You really need the Picasso client as well. And the Hydra RDP protocol is just not as good [as this point] as Citrix's ICA."

The potential rise in Microsoft licensing costs is a red flag for Beverly Russell, director of

information systems at E. D. Smith & Sons Ltd. in Winona, Ontario. She noted how IBM is offering a thin-client version of its Lotus SmartSuite package, dubbed ESuite, for free.

"Why do I need Hydra and Picasso, when IBM is giving me the same functionality free?" Russell asked. □

Q&A: Microsoft on Hydra

John Fredericksen, Microsoft's group product manager for Hydra spoke with Computerworld senior editor Laura DiDio last week to address the confusion over Microsoft's marketing strategy and technical direction for its forthcoming Windows Based Terminal Server (WBTs), code-named Hydra.

CW: What is Microsoft's business case for Hydra?

FREDERICKSEN: Hydra delivers Windows applications to desktops that can't run them today. It lets companies centrally manage Windows 32-bit line-of-business applications like order entry and point of sales.

CW: How many copies of an application does a user have to install on Hydra?

FREDERICKSEN: Microsoft, like Citrix, will offer a concurrent licensing option. If you have 100 users, you will have to buy a 100-user license. But you only have to install it once on the disk. Portions of the application will be re-executed for each user, but they will share some memory.

CW: How much more memory does Hydra require?

FREDERICKSEN: Our recommendation for Windows NT Server plus a Hydra base system is 32M bytes, plus an additional 4M to 8M bytes of server RAM for each network PC or PC user to load applications.

CW: Citrix says some applications may need changes at the source-code level to run on Hydra.

FREDERICKSEN: I believe they're referring to non-Windows 16-bit or non-Windows 32 applications, or applications like CAD/CAM that use an accelerator to draw or paint graphics more quickly. In those cases, we don't recommend Hydra.

CW: Some Hydra beta testers said it needs 100M bit/sec. Ethernet connections to achieve the necessary throughput.

FREDERICKSEN: We think the initial implementation of Hydra will be as good as the existing WinFrame technology. WinFrame uses an average of 10K bit/sec. to 10K bit/sec. in network bandwidth. So 10M bit/sec. Ethernet should be just fine.

CW: Is the Remote Data Protocol (RDP), the proprietary remote Windows protocol built in to WBTs, much slower than Citrix' ICA?

FREDERICKSEN: In Beta 1, it does consume too much bandwidth on the wire. That will be fixed in Beta 2, due this quarter. We expect RDP to offer performance comparable to ICA.

CW: The initial WBTs release won't support Windows NT 4.0 clustering technology?

FREDERICKSEN: This is true. We delayed clustering support in order to ship Hydra as soon as possible. In the meantime, customers who really need it can get it through the Citrix Picasso add-on, which is slated to ship at the same time as Hydra in the second quarter.

CW: Some beta testers report receiving little technical support.

FREDERICKSEN: The Hydra beta comes with a fully staffed support forum, which is part of Microsoft's standard support Product Support Services group. I'm not aware of any support problems with Beta 1.



Will Hydra actually increase total cost of ownership?

Package aids planning service levels

By Patrick Dryden

HELP IS HERE for IS managers under pressure to define and maintain service-level agreements with users of some vital business applications.

Empirical Software, Inc. in Richmond, Va., this week is launching software designed to plan, measure, predict and optimize database performance.

The 17-year-old consultancy has integrated two of its tools that analyze applications based on software by Oracle Corp. and PeopleSoft, Inc.

But a new service-level planning tool — a set of guidelines backed by a consultant who can explain the process and negotiate with users — spurred the most interest among analysts.

"Demand is high for help ex-

plaining how the heck to connect business and information technology goals in the form of service levels," said Steve Solberg, an analyst at Giga Information Group in Cambridge, Mass.

This "consulting service in a box" certainly could help information systems managers walk through the process, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

Empirical's Planner looks like "a great bootstrap mechanism" through its combination of service-level templates and service, said Ray Paquet, an analyst at Gartner Group, Inc. in Stamford, Conn. But its methodology may not apply to diverse situations or other vendors' management tools, he cautioned.

The Planner appears to be more valuable overall than its performance management tools, Solberg said. "They are still immature compared to other tool vendors as far as partnerships and correlation capability," he said.

Together, Empirical's Director and Controller tools "help us prove and improve availability of six custom Oracle databases to our departments," said Brian Seal, database administrator for Virginia's County of Henrico.

But Seal said he can address only service-level needs for his databases. Empirical must complete integration of its suite with tools such as Hewlett-Packard Co.'s OpenView "so we can compare database and network performance to get the big picture of performance," he said. □

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El Nino zaps power, phones

► California storms serve as reminder to IS: Prepare for disasters

By Kim Girard, Nancy Dilos
and Gordon Mah Ung

AS EL NINO'S PAVING CAUSE continues to bounce California, many companies are taking a second — or in some cases a first — look at their data recovery plans.

Officials still haven't finished tallying the damage, but about 640 businesses have called the Federal Emergency Management Agency seeking relief, a spokesman at the Small Business Administration said last week.

For larger corporations, most of the storm-related headaches were limited to power outages and lost telephone service.

Ed Clayton, a disaster recovery planner at Chevron Corp. in San Francisco, said company computers are protected by 100% backup power. Chevron's credit-card system runs on a Tandem Computers, Inc. computer that is mirrored to a system in Houston, and the company spun tapes for mainframe

backup that are taken off-site every day.

Clayton said Chevron beelined up its disaster recovery planning after a water pipe broke in a building during the Loma Prieta earthquake in 1989.

Rob Spoor, a network analyst at McKesson Corp., a pharmaceutical company in San Francisco, said the company has

weathered the threat of storms and earthquakes with full power backup and rotating data backup tapes off-site.

But during a storm two weeks ago, the basement of Green Library at Stanford University in Palo Alto, Calif., flooded. Eight PCs were drenched up to their network cards, and two hard drives were lost. The data was recovered by Drive Savers, Inc. in Novato, Calif.

SPEND TO SAVE

Full information systems departments should have disaster recovery plans, but "some companies haven't spent anything," said Lisa Mao-Ross, an analyst

at International Data Corp. in Framingham, Mass.

On average, larger corporations spend up to 6% of their information technology budget on consulting, application software or outsourcing that is related to disaster recovery planning, she said.

Small to midsize companies are often the most vulnerable, Mao-Ross said.

Since a winter storm took down its server two years ago, Whole Life Expo, Inc., a national exhibit company in San Rafael, Calif., backs up its system daily, said exhibit director Lea Walters.

Overmeer & Nelson Ltd. in Grand Forks, N.D., was hit by the April 1997 Red River flood that left 10% of the company's systems under five feet of water. Company owner Lowell Nelson sent the damaged drives to On-Track Data International, Inc. in Eden Prairie, Minn., and recovered 90% of the tax, payroll and client data.

"We had an individual backup procedure in place, but it had



gone lax due to the frenzied end of the tax season and the time we were spending sandbagging our homes," Nelson said.

On-Track's data recovery job cost \$40,000, a fifth of the estimated cost to replace the site, he said.

Christopher Copley, general manager at Floods, Floods, Floods, Inc. in San Francisco, said the overwhelmed company has stopped taking cleanup

calls. Some corporations don't realize how a damp environment can cripple computers, he said.

"Nothing will happen immediately," he said. But six weeks down the road, water can cause permanent damage. "There will be water inside of the computer whether or not the computer is sitting in the water. You need to get it out of the room or out of that building," O

Drugstore merger hinges on IT savvy

CONTINUED FROM PAGE 1

vestment in computer systems and sterling customer service while also ringing up more sales per square foot than any other pharmaceutical chain.

CVS hopes to use that know-how to help cash in on the lucrative managed care market.

Virtually all the big drugstore chains are looking to strike prescription contracts with health care providers, which can direct subscribers to purchase drugs at a specific network of stores.

As a result, in contrast to the typical acquisition scenario in which the buyer quickly rolls the acquired systems out the door, CVS expects to learn a lot from Arbor's technology operations.

"Arbor has phenomenal business numbers, so we may not go as fast with systems [conversions]," CVS Chief Information Officer Howard Edels said last week.

What that likely means for the 65 Arbor IT staffers is continued employment — at least through the completion of system integration projects that have yet to be determined, Edels said.

AT A GLANCE

CVS

Woonsocket, R.I.

1997 revenue: \$118

1997 net income: \$30.6M

Stores: 3,985

Employees: 44,000

Arbor Drugs

Troy, Mich.

1997 revenue: \$962.5M

1997 net income: \$34.3M

Stores: 200

Employees: 7,000

Of particular interest to CVS are Arbor's systems for planning and laying out stores and those that support the company's highly popular and profitable one-hour photo-finishing operations.

A GOOD TEACHER

Indeed, there is plenty CVS can learn from Arbor's systems, which analysts say have contributed significantly to Arbor's average per-store revenue of about \$5 million — about 25% higher per square foot than the industry average. Photo-finishing services, for example, work to increase store traffic.

"Arbor has consistently been an early adopter of new technol-

ogies and has a lot it can teach CVS," particularly in the customer service area, said Derek Leckow, a retail analyst at Barington Research Associates, Inc. in Chicago.

In early 1994, for example, Arbor deployed a photo finishing club membership system. Customers are issued magnetic stripe cards, which clerks swipe to collect customer data that was previously handwritten over and over on each new film envelope. Photo finishing represented 5% of Arbor's \$963 million in sales last year.

But for its prescription drug business — by far CVS's biggest moneymaker — CVS will definitely deploy its own newly de-

veloped, client/server-based RX 2000 system in Arbor stores.

The combined entity will disperse about 12% of all retail prescriptions in the U.S., which puts the company in good strangle to win some of the highly contested managed care contracts.

"Pharmacy is the heart and soul of our business," said Shafi Shildat, CVS's vice president of pharmacy development. "Pharmacy customers are the most loyal customers. As the population ages, pharmacy is also the fastest-growing segment of health care."

To further boost pharmacy sales, CVS needs to win managed care contracts. Having state-of-the-art computer systems — and a very high penetration of neighborhood-based stores — is critical to achieving those wins. Thus, CVS's recent acquisition binge, including the purchase early last year of Revco D. S. Inc.

But CVS isn't alone. "Virtually all the [drugstore] chains are looking for ways to implement plans with the [managed care] insurance programs," said Phil Schneider managing director of public affairs at the National Association of Chain Drug Stores in Alexandria, Va. O

New warnings on Web security

By Sharon Machlis

WORLD-WIDE WEB SITES that use "hidden form fields" can open up security holes if programmers aren't careful, a California security consulting firm warned last week.

The problem isn't new. But the public warning has brought attention to the issue.

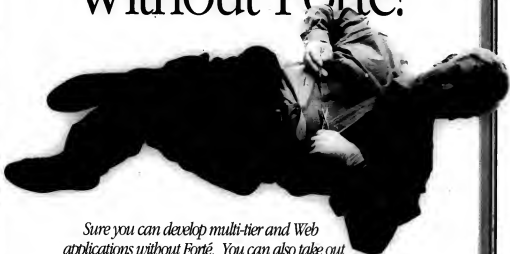
Hidden form fields are used in Hypertext Markup Language (HTML) programming for forms that Web surfers fill out to submit information to a site. Most of the fields are visible, but a separate class of fields can be used by the HTML programmer to keep other data. If the script fails to perform security checks, a hacker might access files, change his authentication level or crash the script.

Programmers can thwart such attacks by checking incoming data from hidden fields to ensure it is appropriate and by not using such fields to make security decisions about a user.

Miora Systems Consulting, Inc. has issued a white paper on the topic at www.miora.com. O



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COMPAQ/DIGITAL: THE AFTERMATH

Digital's in fold, but hard work remains

► Users and analysts look for product integration, cohesive business plan

By April Jacobs

COMING UP WITH \$9.6 billion to buy Digital Equipment Corp. was the easy part for Compaq Computer Corp.

Now analysts are giving the PC maker an 18-month window in which to integrate diverse product lines, come up with a cohesive sales and marketing plan and prove it can support and service everything from desktop systems to high-availability servers from Tandem Computers, Inc. and Digital.

If the Houston-based PC and server maker fails to achieve those goals, it may choke on its acquisitions, analysts say. They said a strategic plan to combine complementary product lines of the three companies should be Compaq's first priority.

"Just because their revenues add up to a certain amount,

it doesn't make them a well-integrated No. 2 vendor overnight," said Rich Partridge, an analyst at D. H. Brown and Associates, Inc. in Port Chester, N.Y.

If that task takes longer than 18 months, users could lose

Compaq wants to go beyond being a Gateway or Dell kind of company, they have to go beyond what NT has to offer" and focus on high-end technologies such as Himalaya and Unix, which made Tandem and Digital enterprise players.



"If they want to compete, [Compaq] has to spend some time developing tailored technologies and services"

— Paul Tinnirello, A. M. Best

faith in Compaq's ability to pull off one of the largest mergers in the computer industry's history.

To be successful, Compaq has to do more than pay lip service to the Unix and proprietary operating system users of Digital and Tandem, Partridge said. "If

Compaq also has to give users a clear picture of the road ahead.

"Vendors like [Hewlett-Packard and Co.] and Sun [Microsystems, Inc.] have migration paths to take you forward, so you know you're buying into something that you've got an upgrade path

with," said Holly Owen, chief information officer at Harding-Lawson, an engineering firm in Novato, Calif. [see related story below].

WHAT ABOUT ME?

"Compaq has to be able to tell me how they're going to help organizations like mine," said

Paul Tinnirello, senior vice president of information services at A. M. Best Co. in Oldwick, N.J. Enterprise shops won't tolerate the idea of a vendor based on the retail channel, he said.

"No one from Compaq ever calls to ask about my business, and if they want to compete, they have to spend some time developing tailored technologies and services," Tinnirello said. Observers say they expect Compaq will generate much marketing hype over its

newfound clout in the industry while it puts together a new corporate image. David Starr, CIO at The Reader's Digest Association, Inc. in Pleasantville, N.Y., has had experience with all three companies and expects that Compaq's apparent skills in marketing its products could help Digital and Tandem.

Watchers on Wall Street also expect Compaq to look closely at Digital's chip technology — particularly if Intel Corp.'s plan to buy that business isn't approved, said Tom Burnett, founder of Merger Insight in New York. "And they really need to understand the guts of Digital's service operation," Burnett said. That's because it will be a core part of the business, but also helps out competitors such as Dell Computer Corp., which uses it to support customers, he said. □

Senior editor Craig Stridman contributed to this report.

Alliance prompts double-take, but Sun, HP users stand firm

By Jaikumar Vijayan

SUN AND HP users expect that Compaq's recent purchase of Digital Equipment Corp. will open more options for them on the midrange. But they expect to keep their high-end systems right where they are, thank you very much.

"For the low and medium-end, we will certainly take a look at what offerings this new alliance will bring," said Dennis Courtney, chief information officer at Dunlop Tire Co. in Ambient, N.Y.

"But Sun is still going to be very secure in our high-end server environment" for the foreseeable future, he said.

LOTS TO PROVE

That sentiment was echoed by Chuck Pierce, executive director at Interex, an international association of Hewlett-Packard Co. users that represents about 35,000 HP sites worldwide.

"Compaq's PC cost model and the services it is acquiring

from Digital mean more competition in the midrange," he said.

"But they still have to prove what they are going to bring to the market that is going to provide an alternative to HP" at the high end, Pierce said.

The Digital purchase sets the stage for what analysts predict will be a tough battle among IBM, Sun Microsystems, Inc. HP and Compaq Computer Corp. for enterprise accounts.

The acquisition gives Compaq new Windows NT scalability and availability technologies in crucial application areas such as mail and messaging and Exchange server environments.

That should help Compaq consolidate its No. 1 position in the Windows NT server and workstation markets and position it well against low-end Unix servers and workstations, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Sun, a Unix-only vendor, could feel the most pressure —

at least in the low-end and mid-range markets, predicted Dale Kutnick, president of Meta Group, Inc. in Stamford, Conn. Its lack of Windows NT prod-



ucts already has cost Sun its leading position in the overall workstation market — Unix and NT combined — to HP, according to recent International Data Corp. figures.

It is HP that could prove to be Compaq's biggest threat in the midrange arena.

In terms of long-term direction and product portfolio, HP's strategy here mirrors Compaq's. Both have strong NT products and services, and both have NT technologies, such as clustering, that have been migrated from the Unix space.

Beyond that battle is the long-term challenge of persuading users to include Compaq's servers in their enterprise server mix, analysts said.

Sun's Unix-only strategy isn't hurting it to the high end. For enterprise servers at least, Unix is just fine for the Burlington Coat Factory in Burlington, Mass.

"We ... really don't see Windows NT being the major operating system for the enterprise going forward," said Michael Prince, MIS director at Burlington Coat Factory.

For the low and medium end we will certainly take a look at what offerings this new alliance will bring

— Dennis Courtney, Dunlop Tire

of capability we are looking for" to run mission-critical applications, he said. "However, if I were shopping for NT, Compaq would probably be my vendor." Prince added.

NEW KIDS ON BLOCK

Meanwhile, IBM's sheer size should buffer it from Compaq for at least a while, analysts said. Its low-profile Windows NT strategy could result in some pressure from Compaq in the RS/6000 and AS/400 markets in the short term.

But the company's mainframe business is not expected to be impacted by the Compaq deal.

The Digital acquisition certainly has put Compaq on the enterprise vendor list, said Charles Jurnosville, a mainframe user and member of IBM's AFSCOM user group in Baton Rouge, La.

But "Digital and Compaq are the new kids on the block" in the mainframe market, he said. "We will continue to look at them, but it is probably going to be a long time before we take them seriously" as a supplier of mainframe-class systems, Jurnosville said. □

OpenVMS users ponder future under Compaq's control. Page 57

COMPAQ/DIGITAL: THE AFTERMATH

Lid may close on Digital-branded notebooks

By Kim Girard

COMPAQ DIDN'T BUY Digital for its PC business, but users may get better notebooks out of the deal anyway.

Analysts predict that Compaq Computer Corp. will fold higher-end notebook technology obtained from its purchase of Digital Equipment Corp. into its professional Armada line of notebook PCs. Compaq had no comment, citing the pending deal.

Users who want to buy a Digital-branded notebook could be out of luck as early as next year. In the short term, Compaq is expected to support Digital notebooks and brand. "Basically, you'll see the collapse of the Digital brand into the Compaq line" in the next year, said Rob Enderik, an analyst at Giga Information Group, a consultancy in Cambridge, Mass. "Compaq may gain a thin, light product that's popular, but the rest of [Digital's notebook] stuff is redundant."

"I won't buy Compaq if they don't have the functionality of the DEC machines. Compaq didn't support NT the way DEC did."

- Fred Winegrad, NationsBanc Montgomery Securities

But some Digital users may snub Compaq if it can't provide equivalent notebooks and enterprise support.

Fred Winegrad, chief technology officer at NationsBanc Montgomery Securities in San Francisco, said he is happy with the deal because he uses Compaq servers and Digital PCs and notebooks. But he questioned whether Compaq notebooks will stack up when they are added to his Windows NT network.

"I won't buy Compaq if they don't have the functionality of the DEC machines," he said. "Compaq didn't support NT the way DEC did. DEC gave us something close to plug-and-play a year ago."

"Digital does have some high-end technology to offer," said Tom Tracey, technical officer at PNC Bank in Pittsburgh. The bank uses some Compaq notebooks but in recent years has bought more IBM laptops. "Compaq doesn't understand that people don't care for trackballs," he said. "We've been leaning toward IBM for form and function."

Though he is happy with Compaq's Armada and LTE notebook service and reliability, Michael Lind, PC support manager at Tredegar Industries, a plastics/aluminum company in Richmond, Va., hopes the deal will help Compaq improve video capabilities and battery life.

"I find myself looking more and more

to Dell for battery life or Toshiba for multimedia features," he said. "Digital may be able to help Compaq keep their machines on the bleeding edge."

Digital last summer was first to announce a sleek, ultraportable PC — the HiNote Ultra 2000 with a Pentium 165-MHz processor and a 14.1-in. screen. But

the notebook didn't ship until fall, and other vendors were already rolling out faster 233-MHz machines.

"Digital engineers good mobile products but hasn't been able to deliver them on a timely basis," said Gerry Purdy, president of Mobile Insights, a consultancy in Mountain View, Calif. □

Advertisement

Managing Re-Systemization

How U S WEST Dex moved from a mainframe to a distributed environment with PATROL

US WEST Dex, one of many U.S. analyst companies, sells Yellow Pages advertising, related mailing lists and other products that are derived from telephone directories. In all, they publish over 300 directories with over 42 million printed copies.

Handling all of this publishing and taking care of nearly half a million USA and international clients calls for complete distribution of their 24 hours a day. All of the company's critical applications must be available to thousands of users.

The original mainframe needed upgrading and the decision was made by U S WEST Dex management to move to a distributed environment. Over a period of many months, operational processes were decreased on the mainframe and increased on the distributed systems.

U S WEST Dex created a new group called the "System Management Center" (SMC) to recommend products to help them ease and manage the transition. As interaction with the SMC progressed over a couple of months, one partner relationship between two vendors stood out, that of Hewlett-Packard and BMC Software.

"We found that the partner relationship between these two companies was able to satisfy a broad range of our needs. The joint presentation of their individual products tended to complement and even strengthen each other. We saw clear advantages to both vendors working with us as a single team rather than separately. We awarded them our contract jointly and plan to order more later this year," explains Project Manager Henry Vargas of U S WEST Dex.

"Our business-critical applications have been re-architected into the client/server model to help give us a competitive advantage. We used the Hewlett-Packard systems due to

their mission-critical capabilities, high performance and the ability of Hewlett-Packard and BMC Software to put together a solution."

These products will provide U S WEST Dex with the ability to collect information from their new distributed computing environment and process it to report the status of individual elements within their IT environment. They will be able to graphically show the current status of all elements of their enterprise, including networks, systems, applications and databases, and manage them through one console. They should realize a seamless, easy transition of critical systems with reduced user downtime.

"We are pleased to be working with BMC Software on this project," said Business Development Manager Travis Muenzing of Hewlett-Packard. "We have worked with them before and have always felt that our products, services, support and education complement each other. Together, we can always provide our customers with a complete, timely and cost-effective solution to their integrated network and system management needs."

U S WEST Dex plans to incorporate more of the Hewlett-Packard and BMC Software products to provide additional support for IT operations, performance monitoring and IT administration.

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Users ignore Netscape's Java woes

By Sharon Gaudin and Carol Shaw

NETSCAPE COMMUNICATIONS Corp.'s apparent backing away from Java, on top of Corel Corp.'s past Java woes, have raised the issue of whether the highly touted programming language is begin-

ning to lose its luster.

But users and industry observers say reports of Java's demise have been greatly exaggerated.

"If Netscape doesn't want to build a bug old application with Java, too bad for them," said Steven L. Epstein, vice presi-

dent of NewsLink Services at Simon & Schuster, Inc., a publisher in Upper Merion, N.J. "It works for us, so we're going to use it. That's all I care about."

Netscape recently announced that it would no longer build virtual machines for the 17 different platforms on which

its World Wide Web browser supports Java.

Then Netscape announced it was shelving plans to build a Java-based version of Communicator, its browser/groupware client. And Corel scrapped a Java version of its office suite.

Teressa Light, manager of engineering operations at Webster, N.Y.-based Xerox Corp., said she has heard the grumbling but isn't disillusioned. "We've made a decision, and we're sticking to it," said Light, who is moving on to her second major Java project. "So far, our Java application has worked real well for us. We're moving ahead."

Michael Pincusky, research director at Gartner Group, Inc. in Stamford, Conn., said the Netscape and Corel problems haven't been so much with Java itself but with how it has been implemented.

He pointed to Lotus Development Corp.'s release of ESuite, its Java-based office productivity package, as evidence that a heavy-duty application can be written in Java.

"Corel was just barking up the wrong tree. They thought they would rewrite WordPerfect in Java and somehow that would make it better," Pincusky said. "Lotus is using Java to write a thin client that will run on a network computer, giving them access to a whole new market."

Paul Skillin, vice president of engineering at Corel, agreed. "As we found out, you can't just make a clone of WordPerfect and any large kind of Windows or Mac application and just sort of make it in Java," he said. "You have to re-engineer the way it works. Once we switched to that kind of thinking, we do find you can make [Java] clients." In fact, Corel is working on another Java project.

Pincusky also said Netscape's troubles are more about the company itself than Java. "It doesn't surprise me that they would try to refocus their efforts," he said, referring to Netscape's recent money-losing quarter.

Netscape pointed out that development of a Java-based version of the Navigator browser still is on track. Code-named Maui, it is slated for release this summer.

Sean Connolly, vice president of technology at Stackpoint, a San Francisco-based online investment service, said he expects Java to stumble now and then as it matures. He noted that development tools still aren't up to par with those from programming powerhouse such as C++.

Although Java's security sandbox secures Connolly's system, it also limits his development capabilities. "When you get into really complex applications the size of Netscape's browser, then it's going to be a lot different than building a charting applet for our site," he said. "But then we've done things on our site that we just couldn't have done in C++." □

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SNET uses 'net to get to small suppliers

By Carol Stiva

WHEN SOUTHERN New England Telecommunications Corp. (SNET) needs to buy a handful of nuts and bolts, processing the paperwork can sometimes cost

more than the actual items.

A purchase order can run \$55, and the invoice can tack on another \$15.

Although the telecommunications company does roughly 40% of its purchasing and invoicing through electronic

data interchange (EDI), that hasn't been an option for many small and midsize suppliers that can't afford EDI.

Through the Internet, the company hopes to boost that percentage.

SNET hired DynamicWeb Enterprises,

Inc. in Fairfield, N.J., to transform its EDI files into user-friendly purchase orders posted on World Wide Web pages.

Small suppliers now need only a Web browser, an Internet connection and a password to access the information. After the suppliers process their orders, they can hit a button to produce an invoice. The information is sent to DynamicWeb, which puts the data into an EDI invoice that is sent back to SNET's system. SNET pays DynamicWeb on a per-transaction basis.

HIGHER VOLUME, LOWER COST

"It's literally pennies to do this," said Kenneth Midzenski, corporate EDI manager at SNET.

Depending on volume, processing an invoice now costs no more than \$1.50 and perhaps as little as 30 cents vs. the \$15 it costs to process the information manually. Cutting a purchase order might run about \$9 instead of \$55, Midzenski estimated.

With a potential of at least 1,000 suppliers SNET can interact with over the Internet, Midzenski is studying the possible cost savings—or cost avoidance—that the new system could offer.

SNET has 112 suppliers and handles 1.5 million transactions per year via EDI, at a dollar value of \$1.2 billion.

With the advent of the new Internet-based system, Midzenski's goal is to increase the number of electronic transactions and get the company down to zero paper.

SNET expects to do business with its first pilot vendor within a month.

Analysts said more and more EDI users are researching their Internet options. Some opt to outsource the work, and others choose to do it themselves.

"If you're still maintaining paper-based processes and have electronic processes, you've got two systems you have to spend money on," said Carl Lehman, an analyst at Meta Group, Inc. in Stamford, Conn. "Business 101 says it's cheaper if you only have one system."

"What is generally agreed upon by large companies who depend upon EDI is that there's no way the Internet is going to replace an EDI value-added network," Lehman said, citing security and reliability concerns. "However, it can supplement [value-added network] services for the smaller trading partners." □



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Purchase order: 30 cents to \$1.50

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Communities try to drum up IT help

► Locals can't wait for feds, devise own strategies to combat tech labor shortage

By Tim Ouellette

LOCAL GRASSROOTS campaigns are helping some cities beat back the effects of the IT labor shortage.

Instead of waiting for federal programs that were announced last month (CW, Jan. 19), these communities are taking the initiative by linking area business, education and government resources.

The result is a sort of "co-operation" that gives businesses a better chance to fill vacant positions and reduce the poaching of existing workers. Examples include the following:

• **The city of San Francisco** will host a summit later this month to find ways to attract and retain multimedia and Internet workers at the nearly 400 such companies in the city.

• **Businesses in Omaha** helped create a six-month boot camp that is focused on training experts in Tandem Computers, Inc. systems. There are many large Tandem shops in the area that need to fill up in 500 related positions in the next few years.

• **A group of companies in Columbus, Ohio**, created the Columbus Information Tech-

nology Careers Network (CITCN) to cooperate in attracting information technology talent to the metro area.

"These companies realized pretty quickly that no one was going to solve this problem for us," said Mike Draper, a spokesman for Columbus' Chamber of Commerce, which sponsors the CITCN.

That is why businesses pushed for the Tandem training in Omaha, which currently has about 1,500 total IT positions unfilled.

TRAINING

The plan follows the blueprint of a seven-month Cobol boot camp created last year at the Creighton Institute of Information Technology and Management.

The boot camp trains non-technical workers in Cobol, so area companies can staff their year 2000 projects.

All graduates of the first class last July have found jobs, and another 300 are enrolled in the program, said Mike Echols, executive director at the Creighton Institute.

While Jim Fox, information systems director at Union Pac-

ific Railroad Co. in Omaha, hasn't hired too many people from the program, he is still seeing a benefit from the community effort.

"As they put more new graduates into the job pipeline, it frees up more people to fill other positions here," Fox said.

That is what San Francisco will try to model when it convenes 300 business, education and city government leaders later this month.

"One of the biggest issues at the summit will be how to attract, develop and retain multimedia talent," said Mara Brazer, managing partner of the San Francisco Partnership for a Joint Business/Government venture to promote business in the city.

Plans include a faster building permit process for workspace expansions; improved city transit routes to key business areas; incentives for building owners to wire their buildings specifically for multimedia firms; and a new multimedia resource center to make small multimedia start-ups less susceptible to failure and more secure for job-seekers.

"We also want to create a steady stream of low and mid-level job training," which will

JOINING FORCES

Regions that are working together to tackle the IT labor shortage:

- 1. **Omaha**
Cobol boot camps for year 2000 staffing
www.dtmind.org
- 2. **San Francisco**
Attracting and retaining Internet and multimedia companies and workers
www.galt.com
- 3. **Columbus, Ohio**
Columbus Informa-
- 4. **Chicago**
Technical Recruiters Network
www.ncc.com/bsi/profile/jones.html
- 5. **Eastern Pennsylvania/Maryland/Delaware Valley**
Technical Recruiters Network
www.dtm.net/tech

include internships and new multimedia programs at area colleges, said city supervisor Leslie Katz.

For its part, Columbus' CITCN is taking its show on the road to lure IT staff.

Companies such as Nationwide Insurance Co. and BancOne Corp. created "traveling Columbus" job fairs that go to different cities promoting the Columbus area and its low cost of living. □

Adopting two laptop standards may ease availability concerns

► IS can guard against shortages, price hikes

By Kim Guard

WHEN IT COMES to notebook PCs, maybe two standards are better than one.

Choosing a second notebook standard for an organization gives the information systems department an alternative in case there are shortages, price jumps or glitches with the other model.

Gartner Group, Inc., a Stamford, Conn.-based consultancy, recommends that users commit to two standards. That will give them more bargaining power with vendors and will ensure availability.

"When availability problems occur, you need to have a back-up," said Ken Dulaney, an analyst at Gartner. "IS gets frustrated because they can't get any machines." Larger companies should avoid a harsh, one-standard

approach that may cause them to spend more than they should on notebook computers, he said.

By splitting the corporate notebook standard between two vendors, notebook manager Joe Quon at Pacific Gas and Electric Corp. in San Francisco said he is protecting his budget and notebook supply.

PERSONAL TASTE

"It's the last say I can't get Dell. Dell has a problem with a model or I can't get a notebook," said Quon, who is adding Toshiba America Information Systems, Inc. machines to the user's Dell Computer Corp. shop "Now I have a back-up."

Adding Toshiba also allows Quon to get his hands on the lighter, smaller notebooks that his road warriors demand but that Dell doesn't make.

STANDARDIZING ON NOTEBOOK BRANDS

	Pros	Cons
One brand	• One price list, easier to budget	• May pay more for some machines
	• Easier to manage	• May miss cutting-edge technology
	• Cheaper cost of ownership	• Limited choice
Two brands	• More models to choose from	• More management headaches
	• Backup vendor is there when there are availability problems	• Less IT control over departments
	• Can take advantage of lower prices by mixing brands	• Higher cost of ownership and support

And mobile users are looking for much more personalized notebooks.

Chris Johnston, a systems analyst at 20th Century Fox in Hollywood said some end users want thin and light ma-

chines.

Though the company has standardized on Toshiba notebooks, Johnston said he is constantly evaluating demonstration models and buys machines

from multiple vendors, including Digital Equipment Corp.'s HiNote notebooks and IBM ThinkPad 560s.

Similarly, Howard Arkin, chief information officer at Gould Paper Corp. in New York, recently standardized on Micron Corp. notebooks, ordering 200 machines.

EVALUATIONS

But Arkin also ordered 20 Digital HiNote Ultra 2000s.

Arkin said he works with the paper company's salespeople when choosing standards, asking them to carry a demonstration notebook and evaluate how easy it is to work on.

But Tom Ducharme, MIS manager at Flow Products, Inc. in Brookshire, Texas, is sticking with a single notebook standard: Dell's Inspiron line.

With one line, the cost is clear, the service contract is easy to manage and management is simple, he said. □

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Control Ratio	150:1	170:1	200:1	150:1
Pixel Resolution	1,024 x 768 (DGA)	1,024 x 768 (DGA)	1,024 x 768 (DGA)	1,024 x 768 (DGA)
Landscape/Portrait Modes	Yes*	Landscape Only*	Yes*	Yes*
Software Controls	Yes	Yes	Yes	Yes
ViewMaster® Color	Yes	Yes	Yes	Yes
Low Consumption	Yes	Yes	Yes	Yes
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*Rotating system (Active Matrix) software. May not be compatible with all software.


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QUICK STUDY

Hot trends & technologies in brief

Supply-chain applications

DEFINITION: Supply-chain management applications execute corporate operations such as managing warehouses, inventory supplies and distribution channels. There are two types of software: execution and planning. Execution applications track the storage and movement of products. They also track the management of materials, information and financial data among suppliers, manufacturers, distributors and customers. Planning applications, also known as optimization software, use advanced algorithms to find the best way to fill an order based on set operation constraints. For example, a planning application can be used to decide how to fill an unexpected large order.

Software rattles the supply chain

By Randy Weston

FROM MANUFACTURERS to retailers, users are searching for ways to keep inventory levels down and production levels up. Supply planning and optimization software can help achieve those goals.

"[Supply-chain optimization] is about finding the bottlenecks in your operations and eliminating them," says Joshua Greenbaum, an analyst at Hurwitz Group, Inc. in Framingham, Mass. "It's no different from a functional standpoint than the way network management systems work."

The software was designed to give users a bird's-eye view of the operation while squeezing the maximum efficiency out of it. Many users are concentrating on execution systems to help manage warehouses and inventory for a competitive edge.

Barry Wilderman, an analyst at Meta Group, Inc. in Stamford, Conn., says ad-

vanced planning systems address the following areas of the supply chain: demand, supply, manufacturing, transportation and distribution.

Companies use supply chain management applications differently, based on the nature of their business, Wilderman says. For example, a consumer packaged goods maker could optimize every area of its business, but a trucking company must focus on distribution and transportation. Once those issues are determined, users can decide how to optimize the supply-chain flow in each of those areas.

They also need to concentrate on a handful of technology issues.

"Users need to understand the number of SKUs they have," Wilderman says. "They need to decide whether they are going to do the planning in memory processing or are they going to do it in the database. They need to check the application programming interfaces and how they interface with their [enterprise re-

source management] packages."

They also need to know that software is only half the battle. It takes a lot of human coordination and communication to make the systems work.

"You have to be in touch with your counterparts at other plants internally and make sure there is a human understanding of what is in the constraint model you are building," Hurwitz says.

Analysts say technology will improve when planning systems and messaging technology merge. That will keep people along the supply chain on the same page.

Use of the software is expected to expand beyond internal operations and eventually allow users to open up their planning systems to suppliers and customers over extranets. □

QUICK STUDY ONLINE

Go to www.computerworld.com. Click on Resource Center, and under In Focus, click on QuickStudy.

AT ISSUE Human factor in software development

ON SITE

By Randy Weston

WHEN MOBIL OIL CORP. wanted to run its supply chain like a well-oiled machine, it turned to optimization software, not 10W-40, for help.

Mobil's U.S. lubricants division in Fairfax, Va., uses Manugistics, Inc.'s supply-chain management and planning software to control the inventory flow among six sites.

The company chose the software after a customer survey showed clients weren't happy with Mobil's ability to deliver orders on time and at the proper location.

The investment has helped the lubricants division move close to filling "perfect orders—that is, having the right inventory at the right place at the right time to meet customers' needs," says Jim Sheahan, supply chain manager for Mobil lubricants.

"We've made about a 12% improvement in fulfilling customer orders on time compared to when we were without Manugistics, and we've had significant levels of reduction in inventory," he says. That's what Mobil had hoped to accomplish when it decided to invest \$400,000 to \$600,000 in the project. The system now pulls data from legacy mainframe systems and eventually will be linked to Mobil Oil's SAP AG R/3 enterprise resource planning system. □

RELATED TERMS

Flow manufacturing

A manufacturing technique that keeps the assembly line on one track so a product moves efficiently through the plant from beginning to end. It steps companies from stockpiling parts of the manufactured product while waiting for an order.

Just-in-time purchasing

Buying supplies and materials for production as needed rather than stockpiling for use when orders come in.

Logistics management

The control and management of operations such as distribution, transportation, plant scheduling and order management.

Materials management

The control and management of supplies and inventory.

Quick response

The ability to quickly change business operations to meet changes in demand.



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OPINION

Tupperware tantrums Speaking as someone who was once ejected from a Tupperware party for heckling the leader, I was particularly amused to read about

a "renegade" Tupperware saleswoman on the Web.

The online edition of *The New York Times* last week detailed the campaign of a wily Web user trying to peddle her plastics electronically—in bold defiance of Tupperware's explicit ban on online sales.

From more than 300 Web sites selling the stuff two years ago, there now are only a few online outposts that have survived the company's determined campaign to stamp them out like

cockroaches. Its 7,000 independent sales "consultants" are told they must have face-to-face contact with customers to properly sell those mounds of brightly colored, burping bowls.

That's nonsense, says Ken

Vugt, the creator of modernshopping.com, one of the few sites where online Tupperware can still be purchased with convenient abandon. He's even reaching a new demographic group: men who would rather be flayed alive than attend a Tupperware party.

Tupperware's allergy to the Web is a symptom of more than the intense discomfort some companies have with electronic commerce. Call me optimistic here, but I hear a distant bell tolling for the death of direct marketing as we know it today.

Last year, an estimated 20% of U.S. retailers offered online shopping, and the Direct Marketing Association says \$48.3 billion was sold via Web catalogs. That revenue has already outstripped the \$20 billion in sales the Direct Selling Association tallied in 1995. Would it be so terrible if our phones never rang again during dinner, with some idiot trying to sell us aluminum siding? Must we endure a living room full of strangers and silly party games to buy a set of plastic bowls?

You can see why I didn't last long at that Tupperware party.

Maryfran Johnson

Maryfran Johnson, executive editor
Internet: maryfran.johnson@cw.com

IN RESPONSE TO THE BILL GATES PIEING INCIDENT...

Larry Ellison vows that he also plans to be hit by a pie, only instead of one large pie, Ellison proposes being hit by a number of smaller, stripped down versions of the Gates pie.



Google! Microsoft says his company is developing a pie called Java cream which takes on the flavor of whoever it hits.



Gary Babbage plans a class action suit against Microsoft on behalf of industry executives who didn't get pie thrown at them.



LETTERS

Hiring practices need work

IN REFERENCE to your story, "Are hiring managers just being too picky?" (CW, Jan. 19), I think Professor Norman Matloff has a point. Regardless of whether there is so information technology labor shortage, hiring managers are being very picky.

I am an IT professional, not a hiring manager. My experience in the past year or so is that both of Matloff's assertions are true. Age discrimination is rampant, and people are looking for specific qualifications such as six months' on-the-job experience with Java.

I have a wide background at both the applications and systems levels. Yet I find that both recruiters and companies are looking for an exact match to overly

detailed job requirements. I've hired people myself in the past and find that what happens when the requirements are stated too strictly is that often the skills mix changes during the draw-out time frame of the hiring process.

I suspect that most positions could be better filled by hiring people who are flexible and have a compatible personality and general background that fits the group.

Here's my suggestion to hiring managers who can't find Java programmers: Hire experienced programmers who have taken the trouble to learn Java but haven't had a chance to use it. Then you have people who are accustomed to the needs of the real world (not just out of school), who show initiative and have a start on the Java knowledge. There may even be

such people within your own organization. If so, they will likely appreciate the chance to work on new technology—most programmers do.

Bill Bruns
Savvis Clavis, Calif.
bbruns@postnet.com

NCs are just the ticket

IT'S SOON! I didn't get to my Dec. 1 issue of *Computerworld* sooner to read John Gantz's column ("Maybe NCs aren't a bad idea after all"). I've been up to my ears reading and surfing, as I have a total redo of my company's computer system to complete by next spring. I am an administrator at a small law firm in Harrisburg, Pa., and can't afford to sink \$500,000 to \$150,000 in a system that will support 40 users.

The bottom line: I'll take as many of those network computers as you thought you couldn't give away. Years ago, I worked at a firm that had a very small Novell network with a couple of diskless PCs hanging off it. They were simple, clean and got the job done. Nowadays, networks are so fickle, you need a full-time administrator just to keep them running. Thin clients and NCs are just what we need.

Nancy Musser Larson
Hofford, Swartz & Morgan
Harrisburg, Pa.

Windows NT handles traffic

BRIEF READING comments in *Computerworld* from users, some of them "front-line administrators," who say that NT "can't back

it" or "just can't keep up" and so forth. I am a consultant with my own company. I spent nine months as the consultant/administrator of happyppuppy.com, the largest game site on the World Wide Web.

For most of my tenure, it was rated one of the Top 10 sites on the Internet, with as many hits as Microsoft's MSNBC, or 5 million to 8 million per day. When our existing servers started to die, I installed the site on 30 NT servers. A Compaq ProLiant dual-processor system with 164M bytes of RAM.

The server was on the backbone at accessone.com, a local provider in Seattle, with no firewall or protection whatsoever. And though we got people trying to hack in every minute, we were never backed with my installation of NT. The server stayed up and handled the traffic.

I am not a Microsoft junkie. I'll use and recommend whatever is best for my clients. But when I hear that [NT] "won't cut it," I just smile.

Brandon Brannen
Tech Net Solutions
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brannen@leadingedge.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9179, 500 Old Connecticut Path, Framingham, Mass. 01901. For numbers: (508) 875-8933; Internet: letters@cw.com. Please include an address and phone number for verification.

Don't look to lawmakers for year 2000 relief

Leon A. Kappelman

Recently, a bill was introduced in the California Assembly that would limit lawsuits resulting from "computer date failure" (the year 2000 bug to me and you). Plaintiffs could recover only for bodily injury and costs of correcting the problem itself.

Just what we don't need: legislatively protected irresponsibility.

This is bad law at its worst. Although perhaps well-intentioned, it would only foster more delays, procrastination and, ultimately, injuries and damages. If you live in California, call your elected representatives and stop A. B. 1750. Everyone else: Keep your eyes open for more of this legislative co-dependency.

I hope no lawsuits will be necessary because of the year 2000 problem. But I know that many organizations aren't dealing with it and that noncompliant products are still put on the market. People and institutions should face the consequences of their actions or inactions.

A Sunday school analogy: God loves you, but he will not repeal the laws of physics if you jump off a building. Pain avoidance, a great motivator, keeps most

Keep your eyes open for more legislative co-dependency.

of us from jumping. Why should society's laws against negligence, irresponsibility and breach of trust be repealed where year 2000 is concerned? Take away the pain people suffer when caught being irresponsible and negligent, and you foster more irresponsibility and negligence.

Some argue that the threat of litigation diverts resources from year 2000 efforts.

It's true that some resources are being used to demonstrate due diligence, but that is unavoidable whether laws are passed or not. Besides, such record-keeping is good project-management practice.

Others whine, "But such litigation will destroy the computer industry. We must protect our special interests." Hogwash. Johnson & Johnson's handling of the 1982 poisoned-Tylenol affair demonstrates that successful management of a corporate crisis calls for candor. By contrast, the current plight of tobacco companies shows that deception and special-interest protections aren't the best long-run business strategy.

IS doesn't need more excuses for inaction and procrastination. Government can help minimize year 2000-related injuries by pressing for responsible action, not through complexity with the irresponsible. The example government bodies should follow is that set by federal financial regulators such as the FDIC and Federal Reserve. Those groups are pressuring institutions to become year 2000 compliant or risk losing their charters.

What else might government do? Here are some ideas:

- Extend statutes of limitations on recover-

ies from year 2000-related damages. That will focus limited resources on mitigation rather than litigation and thereby reduce the need for the latter.

- Offer antitrust exemption so enterprises can freely share year 2000 information.

- Do everything possible to facilitate information sharing.

- Extend tax relief on year 2000 repair costs.

- Limit the liability of diligently compliant parties who are tenuously associated with negligent noncompliant parties.

- Expand testing and certification efforts to help reduce risks to vital infrastructure.

- Help with contingency planning and emergency management efforts.

But those who harm others because they fail to act should not be held harmless.

Never once did Morn say, "If you make a mess, I'll pretend it's not there." I think Morn was on to something. □

Kappelman is co-chairman of the Society for Information Management's Year 2000 Working Group and an associate professor at the University of North Texas' College of Business. His Internet address is kapp@unt.edu.

Radical Internet surgery

John Gantz

In preparation for a big client briefing, I've been browsing — in the old-fashioned meaning of the term — several industry-specific trade periodicals such as *The Public Utilities Fortnightly*, *Health Management Technology* and *Bank Technology News* and

Advertising Age. I'm trying to get a handle on how Internet adoption varies by industry.

Guess what? The Internet is everywhere. Industry after industry, it pops up in the vernacular. Medical images are plopped onto an intranet rather than delivered over an expensive archiving system. General Electric expects to save millions in purchasing by using a "net-based purchasing system. Bankers are trying to sell loans to small businesses. Electric companies are experimenting with reading meters over the 'net.

The literature reveals a flaw in the theory that says the Internet will have a greater impact on companies whose products are made of bits — such as insurance companies — than on companies whose products are made of atoms — auto manufacturers, for instance. The

Internet may have a greater impact on atom-based companies because of its ability to cut manufacturing and supply costs with a relatively small investment in Web technology.

One of the reasons Web spending will grow so fast is the return on investment (ROI) it offers compared with client/server predecessor applications. In 60 collaborative client/server cases charted several years ago by International Data Corp. in Framingham, Mass., the aggregate first-year ROI on three-year investments worth \$29 million was 95% — much better than the prime rate plus 2%. In 11 similar Web-based cases written last year, the first-year ROI was 245% on a total investment cost of \$18 million. Perhaps that was because the Web-based applications touched more than

100,000 users and the client/server applications only 20,000 users.

Those aren't projectable figures — it's not that easy to find Web-based applications in which you can conduct a rigorous ROI analysis — but they tell a story. Web-based applications can be a catalyst for change in all parts of a company.

I think industries in turmoil will gravitate toward the Web faster than more stable industries. The health care industry, under intense cost pressures and full of companies coming and going, will find the Web's cost savings an island of good news in a sea of bad. Utility companies entering the brave new world of deregulated competition will find the Web's speed of new-application deployment a beacon of promise in foggy terrain.

In the next few

Industries in turmoil will gravitate to the Web faster than stable ones.

years, every industry will feel the first twinges of a transformation that ultimately will be as radical as a sex change. Banks are discovering the Internet for intercompany transactions, not just bill paying by consumer technophiles. *Newsweek* and the *New York Times* broke their recent Monica Lewinsky/Betty Currie stories on the Web. Las Vegas gaming moguls are trying to figure out what to make of major pushes by countries such as Antigua, Belize and New Zealand to become Internet gambling hubs.

So while you're wrestling with your company's year 2000 problem, keeping up with salary demands from your network analysts and wondering whether to upgrade to the new SAP system, be aware that the saplings may be shifting underfoot. Forces bigger than you from outside your company may toss you into unfamiliar territory, where small decisions on IT and Internet matters can affect your entire company. □

Gantz is senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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Further II

Carrier Group, Inc. in Stamford, Conn., has signed a three-year deal to provide its research and CD-ROM training courses free to five universities around the country. They are the universities of Alaska, Cleveland, Florida and Kentucky, and Newark Community Technical College in Newark, Conn.

Jungle spin-off

Online recruiter Jungle Corp., based in Sunnyvale, Calif., is spinning off its database technology as a separate product. The jobCanny software integrates job listings from 700 free job sites on the Internet into one searchable database.

Digital signs approved

Federal banking officials announced their "conditional" approval for a bank to offer digital signatures products for authenticating electronic documents. The Office of the Comptroller of the Currency said Zions First National Bank in Salt Lake City can establish a certification authority subsidiary that lets subscribers generate digital signatures that verify their identity when they send documents via electronic mail.

MORE JOBS COMING



In each of the next eight years, 95,000 new jobs will be created for computer scientists, engineers, systems analysts and programmers.

Source: U.S. Commerce Department



Home Depot's Ron Griffin on balancing IS management roles: "When I figure that out, I'll go pick up my Nobel Prize"

Retailer retools IS management team

By Thomas Hoffman

IN ITS STRUGGLE to support a retail juggernaut with 25% to 30% annual sales growth, IS management at The Home Depot, Inc. is taking a cue from the company's corporate mantra: Do it yourself.

The 650-person information systems team is restructuring itself under a hybrid management model that is intended to help it support technology across the fast-growing company while meeting the needs of individual businesses, said

Ron Griffin, 44, senior vice president of information services.

An additional goal is to eliminate redundancy and excess cost at the Atlanta-based company, Griffin said.

Home Depot, which currently has five Expo interior design stores, plans to roll out another 200 stores during the next several years. Combined with international expansion plans — a home improvement store will be established in Santiago, Chile, in July — the \$49.5 billion

Home Depot, page 42

CHILDO SUPPORT

Deadbeat tracking systems lag

By Patrick Thibodeau

TEN YEARS AGO, Congress passed a law requiring states to automate computer systems to collect and disburse court-ordered child-support payments. But today, many state systems are like some of the people they track: They're deadbeats.

The federal compliance scorecard shows 22 states with systems that meet the law and another 15 or so that are near approval (see map, page 46). But some states that missed last October's deadline for automating child support, such as California and Michigan, are big. California accounts for about 1 in every 10 child-support cases in the U.S.

VARIABLES

State officials blame delays on everything from shifting federal requirements to ill-prepared contractors. But they all agree on one cause: Child-support systems may be the most complex systems ever developed in state government.

Deadbeat, page 46

Database needs thoroughbred tools

By Patrick Dryden

THEY'RE OFF and running — hundreds of scheduling scripts that take in 80 million data elements about thoroughbred horse races and feed them to race tracks and betting parlors around the country. Job scheduling software seems mundane, but if it doesn't run reliably at The Jockey Club, horses might not race and bettors might not put their money on the line.

The nonprofit organization, founded in 1894, each year reg-

Database, page 42



Job scheduling software is key in sending data to tracks such as The Bay Meadows Racetrack in San Mateo, Calif.

COMMENTARY

Defending knowledge

GARY ANTILES

"KNOWLEDGE itself is power," said English philosopher Francis Bacon four centuries ago. And a bevy of luminaries throughout history — including Leonardo da Vinci, John Mil-



ton, Samuel Johnson, Oliver Wendell Holmes and John F. Kennedy — have been similarly keen on the concept of building knowledge. So I have been surprised recently to see pundits roundly dismissing the con-

cept. Knowledge management is yet another fad designed to fatten the wallets of consultants, analysts and industry gurus, these naysayers assert. A year or two from now, knowledge management will be just another item on the industry's scrap heap of tarnished silver bullets, they say.

It's easy to be unimpressed with knowledge management because it seems too obvious. For example, one critic scoffed at the notion that we might want to organize the debris on our PCs and send it to some corporate knowledge

Antiles, page 42

Home Depot retools

CONTINUED FROM PAGE 41

lon retailer expects to grow its base of 665 U.S. and Canadian stores to more than 1,100 outlets by the end of 2000.

But Home Depot has "more work to get done than we can do with the existing IS management staff," Griffin said.

That is why the recently hired Paul Hoedeman, the chief information officer at AlliedSignal, Inc.'s aerospace division in Torrance, Calif., as one of three new vice presidents of IS at Home Depot.

Hoedeman will be responsible for Home Depot's core business systems. Mike Anderson, a seven-year Home Depot veteran most recently responsible for store systems, will be responsible for applications infrastructure and planning across the enterprise.

Dave Ellis will continue to be responsible for networking, disaster recovery and technology procurement across the company's business lines.

Rounding out the new management team is Gary Cochran, former CIO at Atlanta-based American Retail Group, a privately held set of 1,100 department stores that includes Up-

ton's and Miller's Outpost.

Cochran will be responsible for logistics systems across all of Home Depot's businesses.

CATCHING ON

The hybrid centralized/decentralized IS management model "has been the emerging, best-practices model for international companies with distributed units," said Vaughn Merlyn, vice president of The Concorus Group, a Roswell, Ga.-based consultancy.

That approach, "balances those things that should be shared across the enterprise and that which should be specific to the business units," Merlyn said.

Beginning early last year, Griffin and his team studied retailers such as Wal-Mart Stores, Inc., Sears Roebuck and Co., and retailers such as Phillips Morris Cos. and several European companies that have multiple lines of business.

Griffin said he found that "almost every [company] is struggling with" supporting technology in fast-growing, autonomous business divisions.

Multinational companies that

tried to centralize their IS operations "are probably not as responsive to local needs as they need to be and that creates more friction and frustration" between IS and the business divisions," Griffin said.

Merlyn said he has seen similar results.

"There are still tensions between what happens in the business units and what goes on centrally" — like when a business division wants to buy or build a system that the IS group doesn't think will benefit the whole company, he said.

NO CONTROL

Decentralized companies that allow their businesses to make their own technology choices have higher cost structures, less sharing of best practices "and a lot of redundancy," Griffin said.

He said Home Depot hopes to set technology standards for its business divisions: to share financial systems, for example, while customizing some systems to fit the needs of one division.

Home Depot's management "is very innovative and very cost-efficient. And to attain that, they really need the right systems in place to ensure that the flow of merchandise is very fluid," said Anna Usmani, a retail analyst at Edward D. Jones & Co. in Maryland Heights, Mo. □

Database demands thoroughbred tools

CONTINUED FROM PAGE 41

sters about 35,000 horses do most of the publishing the American Stud Book. And it tracks half a million records about each horse's domestic race performance each year. "A horse can't run here if we don't have the foal certificate on file," said Greg Brent, assistant racing secretary at Bay Meadows Racecourse in San Mateo, Calif. That record and correct information for the daily program must come from The Jockey Club well before post time.

And not just owners and track managers, but many bet-

ter repetitive tasks to limit the number of operators, said IS officials at The Jockey Club. That goal called for a powerful job scheduler, but one that in-house programmers would have to maintain.

"We were lucky to have sharp C programmers to write a scheduler in the beginning," said Jeanne Stamper, manager of operations and technical services. "But we need them to maintain our unique applications and support new efforts on the World Wide Web." So the club moved to commercial



tors rely on the tasks running on those six Hewlett-Packard Co. HP 9000 systems at The Jockey Club's data center in Lexington, Ky.

Much of the \$13 billion annually wagered on pari-mutuel races is based on race history supplied to tracks and sports books by The Jockey Club and competitors such as the Daily Racing Form.

"No matter what the source, we want accurate and on-time information so customers will be thorough us," says Lenny DelGemo, sports book director at The New Frontier Hotel and Casino in Las Vegas.

To feed these data needs, The Jockey Club relies on software automation to keep its databases up to date without too much babysitting. Remote access management software from Xcellent, Inc. in Atlanta automatically fetches race results compiled by "chart callers" who log each race on their laptop computers.

Coordinating everything is job scheduling software from Unison Software, Inc. in Santa Clara, Calif., which IBM acquired last year for its Tivoli Systems, Inc. management software division. Central operators track the problems and problems with all these tasks from a console running HP's OpenView IT/Operations.

The business goal was to take

schedulers. The job scheduler must post results to the database and extract and distribute that data promptly.

The first commercial tool implemented at The Jockey Club proved unreliable when race misrouting caused an exponential demand for this information, Stamper said.

"We had to put three to four staff back on workstations to manually manipulate data," she said.

Now, Unison's tool reliably delivers 400,000 files and helps support 3,000 online users, she said.

"We want accurate and on-time information so customers will be thorough us."

— Lenny DelGemo, The New Frontier Hotel and Casino

Professional handicappers already have online access to this data so they can analyze and make decisions "just like a stockbroker," Del Gemo said. "Our challenge is to package racing information to appeal to younger operators who grew up with Nintendo and the Internet." □

Anthes: knowledge

CONTINUED FROM PAGE 41

repository. Garbage in, garbage out. But enterprise knowledge databases aren't built from the contents of employees' PCs. Too bad it isn't that easy.

Most automated knowledge repositories come from carefully managed and laborious processes of interviewing subject matter experts, researching the literature, digitizing existing paper documentation and so forth.

Shell Oil has to people doing that full time. And the company claims its five-month-old knowledge management system already is speeding the propagation of "best practices" among its 21,000 employees. One idea in the knowledge base, a business model, recently was adopted by all four of Shell's major operating units.

Ford tells an even more impressive tale. It claims that its "best-practice replication" system, whose use Ford tracks in meticulous detail, saved the

company \$245 million from 1996 to 1997. The payoff from this simple intranet/Web system is astounding.

BIG BENEFITS

IBM and Centric Corp., a Kansas City, Mo.-based provider of software and services to the health care industry, says its digital knowledge base enabled it to shrink its backlog of customer problem calls 60% in a year, reduce employee training time by 30%, and boost its client satisfaction ratings to the highest levels ever.

Those gains are hard to quantify, so we should take cost savings and productivity figures with a grain of salt and allow for bragging by the IS managers at those companies.

But some stories aren't that hard to come by, as Francis Bacon might have predicted. In a recent survey of 30 "technically aware business professionals," The Delphi

Group in Boston found that 28% had already begun or completed knowledge management projects, and 93% said they will have undertaken such projects by 2000.

Fifty-three percent said knowledge management is "a valuable way to organize and use corporate information," and 32% called it "a major new strategic imperative for staying competitive."

Just 3% saw it as "the latest management fad."

Critics who warn of knowledge management consultants gunning for your IS budget have a point. Knowledge management is just as likely as any discipline to attract the unscrupulous. So shop around. Do your homework. Be skeptical. But don't join the 3% who feel knowledge management is a passing fad.

As Samuel Johnson said 200 years ago, "All knowledge is of itself of some value. It is nothing so minute or inconsiderable that I would not rather know it than not." □

Anthes is Computerworld's senior editor, special reports.

pros & cons

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A black and white photograph showing a hand holding a SAP business card. The card is tilted and features the 'TeamSAP' logo at the top, a handwritten signature in the middle, and the text '1-888-TeamSAP' and 'http://www.sap.com' at the bottom. The background is dark and out of focus.

—

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A Better Return On Information.SM

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

'NET TEST-DRIVE

Percentage of people who would consider buying a new car or truck on the Internet without a test-drive?

1998

10%

1997

4%

Source: Harris Group, Inc. (Harris Interactive), the National Automobile Dealers' Association, Washington, D.C.

Electronic replies

MailShuttle Software, Inc. in Redwood City, Calif., is shipping Internet Message Connector (IMC) Enterprise Edition, software for managing Internet, Internet electronic mail sent to a general mailbox, such as sales@company.com.

IMC acknowledges a message when it is received, assigns it a tracking number and puts it in a queue where agents can review it and respond. The software works with Microsoft Corp.'s Exchange, Lotus Development Corp.'s Notes and CCMail, Compaq, Inc.'s Eudora and any other Post Office Protocol 3-compliant mail systems. It costs \$2,000 per server.

E-commerce update

Open Market, Inc. in Burlington, Mass., this week set its release on updated version of its Internet electronic-commerce software, Transact 4, which will be available this quarter. Above more integration with other enterprise applications, increased personalization and reporting, microtransaction capabilities, and multilingual support.

Prices start at \$15,000 for a corporate license and \$2,000 for commercial services providers.

Voice over the 'net

Scate Valley, Calif.-based D4 of Valley, Inc. is creating a free beta version of Power 3.5 software that lets users record and send voice messages of up to one minute over the Internet. It is available on the company's World Wide Web site at www.d4.com. The final version of Power 3.5 will ship at the end of this month.

Legal publisher enters online court

► E-commerce site expands customer niche

By Sharon Machlis

WHEN LEGAL PUBLISHER West Group started selling products on the World Wide Web, the idea was to make it more convenient for its customers to order books.

Instead, "more than half the sales are not [from] traditional West Group customers," said Laurie Hansen, director of Internet commerce technology at the Eagan, Minn., company. "Our assumption is some of these people aren't lawyers."

West Group has never sought to sell outside the legal arena. But Hansen said some of the most popular products on the site are the company's "Nutshell" books, which offer general descriptions of important legal concepts. Designed for the law school market, it turns out the books also appeal to some consumers.

It is too early to say what kinds of new markets or prod-

ucts the Web site might lead to — it has been up only since December, said Mike Wilens, executive vice president and chief technology officer at the firm.

But he said that by the end of next year or the year after, Web commerce might spark new business strategies at West Group.

Electronic commerce makes it more attractive to sell less-expensive items, compared with having sales-

people or telemarketers spend time on a \$20 or \$30 sale, Wilens said. "It's very expensive to sell small books" through the firm's traditional channels, he said. "We think this will change the cost structure."

PRODUCTS AVAILABLE

For now, the site at www.westgroup.com offers an online catalog of about 4,000 products.

with about 1,000 products available for direct purchase on the Web — "hard goods" such as books and CDs. The com-

pany already sells information online over its network, but that is still a "very paper-oriented sale," with customers signing paper contracts before getting access to the data, Wilens said.

Someday, customers might be able to use the electronic-

commerce site to buy access to the online data, he said, or maybe to "unlock" additional data on a CD-ROM. "It's sort of a gleam in our eyes," Wilens said.

West launched its Web site partly because "we wanted to Publisher, page 43



Mike Wilens

"We think this will change the cost structure"



Laurie Hansen

"We wanted to open a third sales channel"

Java creator brews thoughts on future

James Gosling, the creator of Java, says the network is changing how people think about software and how they build it.

And in an exclusive interview with Computerworld senior editor Sharon Gaudin, Gosling, vice president and fellow at Sun Microsystems, Inc., addressed several issues, including Java as a platform and keeping the technology focused.

How do you do workflow management?

It's not about Java. It's about the network. The people who just rebuild in Java are missing the boat. The opportunity is there to rethink things completely. When you're building distributed applications, there's a way to think differently. A lot of that really hasn't gotten into the collective consciousness of the development community.

A lot of external applications are ready to hit the market.

Rethinking what software should do: COSLING: People are having a hard time coming to grips with the impact of the network on software. How do you build software that exploits the fact that you're not on a little stand-alone box, but you're part of a community? It's about cooperating and collaborating. How do you build a spreadsheet that lets you collaborate? How do you do collaborative editing?

On Java as a platform: COSLING: It could be a platform, but it works very nicely on top of an existing operating system. Java isn't so much about providing facilities but providing interfaces to facilities. We don't provide a file system. We provide an interface to a file system.

Gosling, page 48

REVIEW ► Netopia Virtual Office Version 2.0

Document sharing tool delivers real-time control

By David Strom and David M. Piscitello

IF YOU ARE TIRED OF using electronic mail to collaborate with remote partners and need a more real-time tool, then you might want to look at Netopia, Inc.'s Virtual Office (NVO) Version 2.0.

This beta still needs work on handling remote desktop control, but it works well for document sharing as you move about the countryside.

We actually collaborated on

this article by using the product. Each of us installed NVO on Windows 95 and Windows NT machines connected to the Internet via Integrated Services Digital Network routers on our respective office networks. We used that to exchange our reactions to the product's look and feel and used the messaging capabilities to exchange notes and drafts. The NT product was definitely the more stable of the two.

To make NVO work, you will Netopia, page 48

World Wide Wait

The average time, in seconds, it took to download a home page from one of 40 business-related Web sites during business hours the week of Feb. 2

Top 3 best-performing Web sites

UUNET	8.96
MCI	12.12
Compaq	12.43
AltaVista	13.25
Apple	14.20

Slowest access to Web surf

Milwaukee	10.22
Pittsburgh	15.19
Denver	15.46
Slowest access to Web surf	
Minneapolis/St. Paul	52.16
Dallas/Fort Worth	46.52
San Diego	42.61

Source: Reynolds Systems, Inc., San Diego, Calif.

Legal publisher site

CONTINUED FROM PAGE 47

open a third sales channel." Hansen said, along with a field sales force and direct mail/telemarketing efforts. And Wilens added, "We simply need to be there — like all people who sell information."

"The legal industry tends to be slow with adoption of technology. Some of the old-timers have a lot of [resistance] to it, but that's the way it is going," said Erica Ruggles, an analyst at Ciga Information Group in Cambridge, Mass.

Although many lawyers can't spend time surfing the Web, Wilens said, the West Group site targets law librarians who make book purchases and are likely to be more Internet-savvy than many attorneys.

QUICK AND EASY

West Group has invested less than \$1 million on its site, and Wilens said setting it up was fairly straightforward. It took

only about four months from the go-ahead until the site went up.

The Web site uses Transact software from Open Market, Inc. in Burlington, Mass., for its electronic-commerce piece, and Netscape Communications Corp.'s software for the Web server.

The catalog resides in a database built with Oracle Corp. software. The online information system relies on a data center with mainframes and Linux systems. When you have 247 bytes of data, Wilens laughed, "you can't do that on an NT box."

The worst part of the project was pulling together information for the product catalog from numerous companies and business units that merged to become West Group. "Just to get our own house in order turned out to be nightmarish," Wilens said. □

Gosling brews Java

CONTINUED FROM PAGE 47

Focusing on platform independence.

GOSLING: We have been so focused on Windows that doing Macintosh and [Silicon Graphics, Inc.] and many of the other platforms hasn't gotten the attention that it really deserves. Most of the [cross-platform] problems have been that the rate of change has been so large that many of the platforms haven't been very good at keeping pace. You get platform dependencies not because of problems in the theory of the system but because of the realities. But it has been getting much, much better.

What's coming up for Java in 1998?
GOSLING: In

1997, we saw a lot of people building interesting internal applications. Now a lot of people are building external applications, and they're ready to hit the market. I expect '98 to see a much larger volume of real products based on Java. Watch for Lotus [Development Corp.] eSuite, Netmorpher, [Inc.]

project management system, Scrib [Software Corp.] enterprise data management system and Vitrin [Technology's] distributed data management system.

On the hype surrounding Java:

GOSLING: It's never happened before, near as I can tell. Maybe on some other planet. It has been detrimental in some ways. Some of the press reports get out of control, but you talk to the developers, and they're pretty straight about what this stuff is. I think most everybody has built sort of a hype filter.

It's about competing and collaborating

Focusing on the rivalry with Microsoft

GOSLING: That's a struggle Scott [McNealy] goes through every day, deciding what's the right thing to emphasize. Every time I talk to him about it, it's a complex combination of things. On average, it ends up being that we just can't afford to let [the rivalry] alone. □

Netopia boosts workgroup

CONTINUED FROM PAGE 47

need a decent Internet connection. We tried using 28.8K bit/sec. modems, but we would recommend at least a 56K bit/sec. connection and a recent browser. We used Microsoft Corp.'s Internet Explorer 3.0 and Netscape Communications Corp.'s Navigator 3.0 and 4.0. Also, you will need to enable your browser to run Java applets because NVO relies on them for its controls.

FREE ACCOUNT

Before you attempt to install NVO, you must create a virtual office identity at a server. You can purchase the server software, which runs only on Sun Microsystems, Inc.'s Solaris, or you can go to Geocities (www.

special virtual office features. The server also acts as a proxy for the chat, intercom (voice-over IP), and remote viewing and control features.

The NVO client uses your browser to connect to the server. Visitors can learn that you use NVO by checking an NVO directory maintained by Netopia.

Setting up NVO was a bit of a hassle. Our beta had no printed documentation, something we recommended Netopia include. Nowhere was it mentioned that you first need to set up an account on the Geocities Web site. Once you do connect to Geocities and create an account, however, help files walk you through the remainder of



The conference button on the office door will lead you to various Netopia Virtual Office applications

the setup process. The remainder of the documentation is provided via E-mail. That is a nice touch.

Once NVO was up and running, we could create files, leave messages for each other, check to see if the other person was

online and at his machine (the "knock" facility, complete with a knocking sound), and take control over the remote desktop.

The control application turned out to be the most demanding and shakiest of the applications, even on Pentium-based PCs with 64M bytes of memory. We had to close down nearly all other applications to get decent response time. Its need for bandwidth made it almost unusable over dial-up modems.

The chat and file transfer ap-

PRODUCT REVIEW

► Netopia Virtual Office Version 2.0

NETOPIA, INC.
(formerly Farallon, Inc.)

Alameda, Calif.
(510) 814-9100
www.netopia.com

Price: \$49.95

Pros: Simplified file exchange to enable work-group collaboration

Cons: Remote control application still somewhat unstable

plications were simple and intuitive.

NVO has a plethora of passwords to control access to various parts of your office. Also, we didn't like that NVO was so noisy. It asks you lots of personal questions about your gender, birth date and so forth without any indication of which ones are required and which aren't. We would prefer a simpler setup.

SOME PROBLEMS

One of the biggest problems we had was that NVO needs a public IP address to work. One of us uses Network Address Translation — which maps a series of private IP addresses to a single public IP address — to connect his network to the Internet, and we couldn't control that machine because of it.

Our beta experienced its share of crashes that required a complete boot to clear.

We also didn't care for the invitation letter that a new NVO user can mail to his closest friends. Not only did it look and feel like spam mail, but if you neglect to fill out the form with any closing remarks, you will get a very misleading error message.

We hope Netopia will fix these problems before NVO's actual release. □

Strom is president of David Strom, Inc. and publisher of "Web Informant" at www.strom.com. Picotello is president of Core Competence, Inc. and co-producer of The Internet Security Conference. at www.corc.com.com.

NEW PRODUCT

ELEMENTAL SOFTWARE has announced Drumbeat 2.0 Professional, software that authors and manages cross-browser World Wide Web sites.

According to the Carlsbad, Calif., company, the software lets users point and click on lists of possible interactions.

The software then takes the selected interaction and creates the necessary Hypertext Markup Language or JavaScript.

Drumbeat 2.0 Professional costs \$799. Elemental Software (760) 931-7171
www.elementalsoftware.com

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Briefs

Apple Customer Service Apple Computer, Inc., in Cupertino, Calif., has announced a list of new services that will help its customers provide better service to their large base of new customers. The list is planned to be ongoing, and it will cost \$1,000.

The list will support all types of services to public, but it will not include any of the following: Internet access, e-mail, and digital subscription.

IBM service package

IBM Corp. in Greenwich, Conn., has announced the new IBM Service, a new service package that gives IBM service the physical connection needed for remote dial-in and LAN dial-out. It supports up to 40 simultaneous remote connections in a range of speeds and features, including Integrated Services Digital Network. The IBM Service package costs \$15,000 in a 30-part configuration.

Intel price cuts

Intel Corp. has announced price cuts on some of its Pentium and Pentium Pro processors. The price of the Pentium Pro, a 300-MHz processor, will be cut from \$150 to \$140. The price of the Pentium Pro, a 300-MHz processor, will be cut from \$150 to \$140. The price of the Pentium Pro, a 300-MHz processor, will be cut from \$150 to \$140.

EXPENSIVE NOTES

Cost of ownership per user for leading messaging/groupware applications:

Novell's GroupWise \$136

Microsoft's Exchange \$486

Lotus's Notes \$719

Costs were for a three-year period and included planning, implementation and operation.

Source: Gartner Group, Inc., Stamford, Conn.

MCI links browsers, reps

► Web/telephone link eases customer service, grows sales

By Matt Hamblen

CREATIVE COMPUTERS, INC. sells \$3 million worth of computer products per month over the Internet. But to grow, it constantly needs to distinguish itself from other online vendors.

"All the computer sites look the same to the end user," said Jonathan Bumba, sales director at Creative Computers in Torrance, Calif.

Creative Computers recently hit on new call center technology. It says adds competitive advantage by bringing its site closer to customers. Last December, it began using NetWorkMCI Click'nConnect from Washington-based MCI Communications Corp. to make it easy for customers to reach a

live customer service agent at Creative Computers' call center. Customers can click on a special icon on Creative

Computers' World Wide Web site and speak through their computer to a sales agent using the same link that got them to the Web site.

The connection requires at least a 486-based PC with microphone and speakers, an Internet connection of 28.8K bit/sec. or faster and special software. MCI gives end users a free download of NetSpeak Corp.'s Mini-Web Phone soft-

ware, which works with proprietary technology in MCI's network to integrate the switched telephone network with the Internet.

The calls arrive at Creative Computers on an MCI toll-free number and enter the company's 300-person call center. They are then routed to an agent who can view the same Web page the customer sees.

With Click'nConnect, Creative Computers can "bridge" the relationship gap that is often created by Internet usage. MCI page 52



Jonathan Bumba
Click'nConnect has boosted Creative Computers' bottom line

\$600M net upgrade takes flight



By Laura DiDio

IN NOVEMBER 1996, a brand-new company took over the responsibility of keeping passenger flights over Canada running on time and on course.

The area Navigation Canada protects is vast — more than 75 million square miles of airspace. Its tools are old — Digital Equipment Corp. VAX clusters that required air traffic controllers to "hunt for information on six different sys-

tems," said Hugh McCallum, the company's director of operations.

But privatizing the Canadian government's air navigation system allowed the new entity to raise \$600 million for a three-year network upgrade that will make air traffic control operations safer, more efficient and secure. And it ultimately will let Navigation Canada streamline operations and cut annual costs by \$15 million, McCallum said. "Efficiency is the main gain,

The most important business benefit to the general public will be a safer and more secure air traffic control system. We're giving our controllers better tools to do their jobs," McCallum said.

The end result will be fewer flight delays and the ability to support routes that are more direct and fuel efficient, which in turn cuts costs. "Ultimately, this will eliminate conflicts like several planes vying for the

UB users feeling abandoned

► Canceled product plans force users to rethink network plans

By Bob Wallace

SOME USERS ARE concerned about the future of their networks following confirmation from Newbridge Networks, Inc. that it has stopped developing the LAN products it acquired when it bought UB Networks, Inc. in January last year.

Company officials said at the time that UB product development would continue as Newbridge — a wide-area network switch vendor — strove to become a major LAN player.

But Newbridge has since cut UB's staff from 1,100 to 170, lost all senior UB management and scrapped key UB product development projects. It now plans to resell 3Com Corp.'s LAN products.

Newbridge doesn't plan to offer UB customers incentives to move to 3Com products, according to a UB spokesman. **Firm couldn't wait for UB to make products**



BAD NEWS

"These developments have put us in quite a quandary because we believed what Newbridge told us about continuing forward with the UB product line," said Dan Howard, director of technical support at Express Scripts, Inc., a health care management company in Maryland Heights, Mo. "They came in after buying UB and said 'life is good' and pledged to do more product development on the UB line," he said.

Express Scripts has invested about \$500,000 in UB products, says 52

Upgrade, page 52



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@ Common sense says that this is the way it should work. But the secret of most e-business messaging software is that when you hit the ceiling on its capabilities, that's it. You have to throw it away and start over. The cost, the aggravation, and the inconvenience are huge. For information about Lotus messaging solutions, go to [www.lotus.com/worksnow](http://www.lotus.com/workshow)

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for the Net

LOTUS NOTES DESKTOP®

The ultimate integrated
intranet client

LOTUS NOTES MAIL®

Most advanced messaging
client for the Net

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MCI product links browsers, reps

CONTINUED FROM PAGE 49

Bumba said. "It has definitely helped our bottom line."

Reginald Bandler, an account executive who works on commission making phone sales for Creative Computers, said customers use the service to get more information from a live agent after accessing the Web page and to find something they saw on the site.

"The customer and I are both working on the same pages, if you will," Bandler said. "It's

definitely a sales tool." The service also has helped up customer interest in the Web site, he said.

Creative Computers has seen a "dramatic increase" in the dollar amount of each order taken over the Internet and the number of return customers since the MCI service was installed, Bumba said. And the percentage of incoming calls from customers that are converted to sales is above the

industry average of 35% — probably because customers are connecting to a sales agent quicker than before. Previously, customers would need to have a second phone line to make the call or log off the Internet to make the call. "Two lines per home is not that common," Bumba said.

FIRST OF ITS KIND

Barbara Ellis, an analyst at Zona Research, Inc. in Redwood City, Calif., said MCI's service represents the first convergence of voice and Internet in the call center. Lucent Technologies, Inc. in Basking Ridge, N.J., and Nortel, Inc. in Research Tri-

angle Park, N.C. both recently announced hardware that can be purchased by service providers to offer the same service as MCI, analysts said.

"Call center technology is hot," Ellis said. She said the MCI service is expensive for companies to implement.

In addition to the cost of a toll-free call, user companies on average will pay about \$4 for every voice contact through the Web site, she said. While a beta tester, Creative Computers uses the service free. MCI hasn't announced specific prices. Bumba said he expects to pay "much less" than \$4 per call.

"Call center technology is hot."

— Barbara Ellis, Zona Research

\$600M net upgrade takes flight

CONTINUED FROM PAGE 49

same runway at the same time," he added.

The upgrade, called the Canadian Air Traffic Control System (CATTS) will take off this summer. Navigation Canada will replace the VAX clusters with Hewlett-Packard Co.

HP 9000 servers and HP Coo Unix-based workstations, said Sid Leickner, supervisor of communications engineering.

The new systems will give controllers radar data, flight path information, computer-based conflict prediction, weather

updates and navigational aid data on a single system, Leickner said.

CATTS also will automatically route flight plans to the appropriate people. "Automating the task means there's less chance of human errors, like losing

critical information," McCallum said.

Before privatization, the air navigation system was funded mainly by the Air Transportation Tax levied by the government. The tax would have been insufficient to raise enough to pay for the CATTS upgrade, McCallum said. As a private, non-profit firm, Navigation Canada will create a set of fees to charge its customers — the airline industry — for its services, he said.

High network and system availability is another advantage of the CATTS system. Each of Navigation Canada's 23 operational sites will be outfitted with three servers — a primary, a backup and a third server for training purposes.

"We've built in the redundancy to ensure that we get near-100% uptime. Our air navigation systems can't afford to be down for even five minutes," McCallum said.

Ironically, CATTS is more open to security breaches than the proprietary VAX systems.

"From a security standpoint, Navigation Canada is not as concerned with hackers invading the network to steal data, but rather that they could launch a denial-of-service attack or a virus that could down a portion of our network," McCallum said.

To thwart would-be hackers, Navigation Canada is using Secure Frame Unit frame-relay encryptor from Sunnysvale, Calif.-based Cylink Corp. and its Privacy Manager, a software key and message management device. The combination of the two will ensure that flight data is transmitted and received "without modification or corruption," McCallum said.

UB users feel abandoned

CONTINUED FROM PAGE 49

ucts, which make up 95% of its network. "We thought what we had with UB would carry us for a while, but now we have to start from scratch and evaluate products," [while] looking more closely at the company line of each vendor," Howard said.

Newbridge will maintain an inventory of UB products and provide support indefinitely, but it won't add key enhancements such as Layer 3 switching to UB switches, a company spokesman said. Newbridge doesn't anticipate any additional buyoffs, the spokesman added.

UP IN THE AIR

"As a user, these developments present me with uncertainty and concerns," said Tom Shoop, director of systems engineering at Western Union Corp. in Paramus, N.J., another longtime UB user. "I'm waiting to hear how Newbridge plans to maintain and support my UB equipment. Cutting away so much UB staff cuts away the UB [product] knowledge base."

Although Shoop is concerned about his current network of UB products, he said he would be willing to eventually replace them with similar JCom models. "My confidence in Newbridge's plan isn't completely shaken," he said.

LOSING THE RACE

Concerns about the completeness of UB's line pushed UB user Air Products and Chemicals Corp. to another vendor for a recent project in which the specialty gas company replaced more than 100 hubs.

"One of the reasons we didn't go with UB was that our bid specified off-the-shelf products, and what they were pitching was a month away from reaching manufacturing," said Virgil Palmer, director of telecommunications and networks at Air Products in Allentown, Pa. "If companies aren't aggressive enough and produce the products users need, they can fall off the peak pretty quickly," he said of UB.

Air Products, which began using UB products in the mid-1980s, decided to award the new project to JCom. Given Newbridge's decision to resell JCom LAN products to its UB customers, "things worked out pretty well for us decision-wise," Palmer said.

NEW PRODUCTS

BERKELEY NETWORKS has announced the E8 and the E4, the first two products in the company's Expanse/NT series of integrated network services switches.

According to the San Jose, Calif., company, the switches combine the Windows NT Server operating system with the ability to process up to 70 million packets/sec. The E8 is an enterprise backbone switch that can accommodate three to 48 Gigabit Ethernet ports, 24 to 384 Fast Ethernet ports, or a combination. The E4 is a modular, stackable switch with three to 24 Gigabit Ethernet ports, 24 to 192 Fast Ethernet ports or a combination.

An entry-level E4 system with 48 Fast Ethernet ports costs \$30,000.

Berkeley Networks
(408) 395-0330
www.berkeleynet.com

NETORIA, Inc. has announced SFLugin 3.13 Version 2.0 software that simplifies the log-in process for Novell Directory Services (NDS).

According to the Orem, Utah, company, the utility adds support for NT workstation and single sign-on with Lotus Notes. Costless login allows login from anywhere on the NDS tree with only user name and password, so remote or traveling users don't need to remember their full content.

Pricing ranges from \$10 per node for quantities between 50 and 100 to \$1 per node for quantities greater than 3,000.

Netoria
(801) 237-0722
www.netoria.com

ARIEL CORP. has announced Rascal RS2000, a single-slot Peripheral Component Interconnect card that provides remote access to NT Servers.

According to the Cranbury, N.J., firm, the PCI card can accommodate up to 24 ports. The ports can support remote sessions originating from any combination of digital 56K bit/sec., analog 33.6K bit/sec. or 64K bit/sec. Basic Rate Integrated Services Digital Net-

work (ISDN) customer equipment. It detects the type of customer equipment that initiated the call and automatically routes the call to the appropriate modem or ISDN terminal adapter.

It costs \$9,995.
Ariel
(609) 860-3900
www.nascal.com

NET REALITY, Inc. announced WiseMan, a hardware and software product for WAN bandwidth management.

According to the Sunnyvale, Calif., company, the system sits directly on the wide-area network between the router and the public switch, which enables management of each circuit within the frame-relay or leased-line link. A shaping algorithm allocates traffic according to available bandwidth. Users can set the system to give higher priority to business-critical traffic.

The price is \$14,995.

Net Reality
(888) 596-6777
www.net-reality.com

Software

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Briefs

WAREHOUSE HURDLES

What are the most significant challenges of data warehousing?

Performance	57%
Loading data	54%
Ensuring availability	47%
PC access	45%
Structuring data	43%
Security	37%

Base: 496 U.S. IT managers; multiple responses allowed

Source: International Data Corp., Framingham, Mass.

Notepad, then system

Notepad Communications Corp.'s acquisition of One Software, Inc., has been hailed with the launch of the Notepad Application Server 3.0, the Application Builder 3.0 development environment and the Notepad Builder tool kit for multiphase data systems.

The Application Server runs on Windows NT and Solaris per CPU on Unix boxes. The Application Builder runs on Unix per developer.

Building One PeopleSoft

The PeopleSoft Co. is striving to simplify its PeopleSoft, Inc., software to simplify its business customer acquisition and serve as its financial engine.

Analysts said PeopleSoft also serves as part of the strategy and integration with the PeopleSoft Group, which is the PeopleSoft and isn't related.

Data sources

Microsoft Corp. is Palo Alto, Calif., has released an expansion of its data management software that can handle both structured and unstructured data, including documents, spreadsheets, and other types of data. The software is called Microsoft Office 95 and is available in both English and Spanish.

Software to tame supply chain tiger

► Cereal maker seeks global coordination

By Randy Weston

KELLOGG CO. OWNS breakfast. The maker of Corn Flakes holds more than a 40% market share in the breakfast food industry. But that doesn't mean it can rest on its Eggo.

Pressure from customers such as Wal-Mart Stores, Inc., and Kellogg's own growth from a \$3.3 billion company 11 years ago to a \$6.8 billion company last year, is spurring the producer of Pop-Tarts and Rice Krispies to invest millions in new software systems to support the business processes necessary for global operations.

"We need to be able to give

our customers what they need as they begin to grow," said Jay Shreiner, chief information officer at Kellogg in Battle Creek, Mich. Those customers include Wal-Mart and other sophisticated retailers and grocery chains that are expanding their reach beyond Main Street U.S.A. and setting up shop in every corner of the globe. But the retailers want their suppliers — Kellogg, for instance — to continue to give them the same service.

"We want seamless integration so data can be entered in one place and flow to another," said Doug Wegner, Kellogg's global program director. "The trade-off sometimes is that you



are forced into a big-bang implementation approach, and that isn't practical for us. A company like ours also wants to

keep independent modules so we can implement the system regionally."

Kellogg, page 54

Data warehouse users seek guarantees

By Craig Stedman

SERVICE-LEVEL agreements are finding their way into data warehouses, giving business users a written guarantee of access to analytical data.

The agreements, an off-shoot

of the service-level contracts used on big transaction systems, usually don't set specific performance thresholds. That's because decision support queries can be all over the map in terms of complexity.

But the pacts give warehousing staffs a data uptime target to hit. They also may specify the frequency of warehouse updates and divvy up duties between information systems workers and end users.

Several technology managers who have or are planning such agreements said their appeal is simple: Data warehouses are becoming a key

Share and share alike

► Spec details how data can be shared

By Barb Cole-Gomolzi

FEW LARGE companies have been able to standardize on a single document management system, and that has meant higher costs in end-user training, support and systems integration. But a recently published specification could change all that.

Earlier this month, the Document Management Alliance

(DMA) published its specification, which outlines how information can be shared among different document management systems [CW, Feb. 2].

"The DMA work helps protect our investment in document management technology," said Benton Ong, a senior principal scientist at The Boeing Co. in Seattle.

The company has multiple

Spec links, page 54

Sales force's paperwork reduced

By Kim Girard

SELLING ADS is much simpler these days for Charis Clinton, a retail account executive at The Daily Oklahoman.

To boost advertising revenue by a targeted 6% this year, the Oklahoma City newspaper re-

cently armed its 40-member sales force with software that simplifies ad sales and rate tracking, reduces ad presentation time by about a week and provides information about the competition.

"Now I have all the ads my customers have run over the past year, how much they spent, and I know where the ads were placed," Clinton said. "I've got that at my fingertips."

Though training to use the software was time-consuming, Clinton said the system is a lot more efficient than her method

Paperwork reduced, page 54

Owens & Minor's Don Stoller; employees "really depend on the warehouse being there"

Kellogg tames tiger

CONTINUED FROM PAGE 52

The need to distribute systems while standardizing on one product led Kellogg to Oracle Corp.'s Consumer Packaged Goods (CPG) software. The product is a mix of applications from Oracle and other vendors.

Oracle CPG includes Oracle's financial and manufacturing management software sewn together with software from Manugistics, Inc. in Rockville, Md.; Industry Martek International Corp. in Tarrytown, N.Y.; Indus International, Inc. in San Francisco; and Information Resources, Inc. in Chicago [CW, Feb. 9].

Kellogg plans to roll out the package in North America, Latin America, Europe and Asia-Pacific. Each region will implement the same software but decide for itself which pieces take priority.

GLOBAL SYSTEMS

"We don't use [the central control] word," Shreiner said. "There's a big difference between global and central systems. Global [systems] means giving people in the various areas the tools to make the right decision for Kellogg's head-quarters needs access to certain information, but we do not believe in running the worldwide supply chain explicitly from Battle Creek."

Once the basic implementation is done sometime in 2001, Shreiner said Kellogg expects the payback in clearly defined

areas including the following:

- Improved inventory management.
- Accruals integrated into the system.
- Support for multiple product launches.

"Our vision for the supply chain is to take an order anywhere, make it anywhere, stock it anywhere and ship it from anywhere," Shreiner said.

"Global [systems] means giving people the tools to make the right decision."

— Jay Shreiner,

Kellogg

One problem that still plagues Oracle's CPG package is tight integration. Integration allows data to flow effortlessly through the system without losing its integrity.

"These products [in Oracle CPG] need to stand as individual products, and the challenge will be to make it look like one single transparent application," said Roddy Martin, an analyst at Advanced Manufacturing Research, Inc. in Boston.

Kellogg's staff is confident that by the time Oracle CPG 3.0 is released in 1999, the package will be tightly integrated. In the meantime, Kellogg officials said they will settle for a little less integration. □

Data warehouse users ask for guarantees

CONTINUED FROM PAGE 52

component of how companies do business.

"To us, the data warehouse is a production system," said Michael Merritt, chief information officer at Primetech, Inc. in Philadelphia. "Everybody from our CEO on down recognizes that it is probably the keys to our kingdom."

KNOW YOUR CUSTOMERS

Primetech, a satellite TV company, warehouses about 17 bytes of internal data and information from external sources. Business users rely on the data to "know who our customers are," Merritt said.

And information systems staffers hear about it when people can't get into the data, he said. "The phone calls

you get [from users] are when the warehouse is down," Merritt said.

A service-level agreement that covers the data warehouse was put in place last year. The agreement sets percentage targets for warehouse uptime and data availability and also mandates that the warehouse be revamped or expanded every four months "so it never gets static," Merritt said.

Owens & Minor, Inc., a distributor of medical and surgical supplies in Glen Allen, Va., expects to nail down a service-level agreement later this year.

The company is working to grow its data warehouse beyond sales, inventory and accounts receivable information and plans to open it up to a wider

CONTINUED FROM PAGE 52

document management system for various activities such as aircraft design and documentation, he said. Ong said more and more users at Boeing need to at least view the information locked in those document repositories and they want to do that from a single client application or World Wide Web browser.

Without an interoperability specification, 15 managers would have to write custom interfaces among document management systems to achieve that, Ong said.

But with the DMA specification, "users will be able to get access to various document

repositories without using a [proprietary] client," Ong said.

Another user, Bob Meyer, a document systems manager at Jacksonville Electric Authority in Jacksonville, Fla., called the DMA specification "a wonderful idea. I want to pick the best-of-breed [document management] software. If there is a standard, it makes things so much easier."

UNDER PRESSURE

The DMA specification, created under the auspices of the Association for Information and Image Management International, an industry group in Silver Spring, Md., also could help

companies are under pressure to exchange documents with customers and trading partners via the Internet, users said.

"When we first started working on DMA, it was very much about big companies with islands of information," said Kevin Vaughn, a consultant in Berkeley, Calif., and a member of The Black Forest Group, a coalition of Fortune 100 companies that has been active in the DMA work.

"Now the big issue is extranets," Vaughn said. "Most companies can't make documents available [to other companies] without jumping through hoops." □

Software reduces sales force paperwork

CONTINUED FROM PAGE 52

of a year ago: no computer, and time wasted hunting down information in paper files.

About 40 advertising representatives at the 325,000-circulation daily newspaper now use Media Sales Explorer, a software application from SoftAd, Inc. in Mill Valley, Calif.

The system ties customer contact information on the department's legacy system to a new system that provides rate and ad scheduling information for advertising, sales and personal productivity, among other tools.

With Media Sales Explorer,

salespeople can call up different pricing scenarios for a customer and develop ad campaign proposals on a notebook computer from the road or from home. Once an ad is sold, salespeople can send a copy of an ad insert back to the paper's order-entry department from their laptops.

The system also gives salespeople information they need when they compete with television and radio executives for the same ads, said David Thompson, ad director at The Daily Oklahoman.

Specifically, the database includes updated information about a station's on-air format

change or ownership shifts so ad representatives can take advantage of new opportunities or propose a media mix of TV, radio and print advertising to a potential client.

The system also provides potential ad buyers with subscriber information by ZIP code to determine, for example, an area in which a retailer may want to advertise. Thompson said he invested in the system to cut the time salespeople spend at their desks — which was about 75% of the workday — filling out a lot of redundant paperwork to get an ad to production and billing.

PLAYING THE FIELD

"We took a look at our sales divisions here and our face-to-face time with customers was limited," Thompson said. "We started looking for ways they could increase time in the field." Thompson said he is confident the privately held firm's several-million-dollar investment will pay for itself within five years — if salespeople find an average of a quarter-page more per month.

But getting salespeople to use sales force automation products and reaping revenue gains is tougher than companies expect. "The majority [of projects] fail to meet expectations," said Hugh Bishop, an analyst at Aberdeen Group, Inc., a Boston-based consultancy. Analysts said up to 70% of the implementations fail because they don't offer any valuable information to end users or are too difficult to use. □

swath of end users.

"You don't want people to lose faith in something they just got their hands on," said Don Stoller, director of decision services at Owens & Minor. "They really depend on the warehouse being there if they have a meeting with a customer in two hours and need to get out a report."

Stoller said he also wants a formal uptime goal to shoot for so he can measure how well his warehouse staff is doing. But one prerequisite likely will be writing some software to automatically monitor the data warehouse for unscheduled outages, he said.

That sort of tool is still largely a do-it-yourself project. Hewlett-Packard Co. last fall detailed a

warehousing management suite with support for monitoring service-level agreements, but that is being sold through its consulting unit and hasn't started beta testing yet, according to HP officials.

Patricia Seybold Group, a Boston-based consulting company, predicted that the demand for service-level agreements will grow this year as round-the-clock data warehouse availability becomes more important to companies.

But one thing that isn't easy to build in to a warehousing service-level agreement is a performance guarantee.

For example, Primetech spec-

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Briefs

Cheaper ThinkPads

IBM last week slashed the price of several ThinkPad notebooks, including the high-end ThinkPad 770—which was reduced by \$450 to \$2,195.

The ultra-portable ThinkPad 560, ThinkPad 550 and ThinkPad 510 series also were reduced by up to 25%.

Fingerprint security

Digital Persecution, Inc. in Redwood City, Calif., recently introduced its Ultra/J fingerprint identification system, which provides access with a unique ID and single system log-on.

It includes a computer-mounted fingerprint scanning device that plugs in to PCs and laptops. Ultra/J will ship in mid-April. The complete package, including the fingerprint-scanning unit and software, costs \$195.

Value stacks up on PCs

Danisco's Value Car Dealers Development Corp. has signed a \$16 million agreement with Digital Equipment Corp. to provide hardware—including more than 5,000 PCs—and services that will be deployed across one dealer or other in Sweden.

The agreement is part of an overall network upgrade by the car manufacturers, which also plans to furnish customers with online information about cars and their availability.

Mainframe migration

Digital General Corp. has announced a six-month server that integrates Cluster Systems, Inc.'s Windows distributed database software.

DC's new Teradyn-to-A-Box enables Windows-based applications to reside and execute on DC's Arden server.

The Teradyn-to-A-Box enables several different types of client hardware, including Ultra notebooks, Workstations and handheld devices, to access and run Windows applications via a corporate network.

IBM's Seascope not quite to shore

► Mainframe users access NT, Unix data; no "open" storage yet

By Nancy Dillon

IBM's Seascope storage announcement last week gave users a box that lets mainframe disk systems support Unix and Windows NT data. But users may have to wait until midyear for IBM to unveil an open systems array that can connect to multiple server platforms at the same time.

Seascope, introduced last June, is a group of products designed to keep pace with open systems storage leader EMC Corp. Seascope promises interchangeable storage "building blocks," such as drive units and

THE FUTURE OF OPEN SYSTEMS STORAGE		
Vendor	Approach	Challenges
EMC's Symmetrix family of enterprise storage systems	One hardware design works with all storage software	Meeting application-specific storage needs
IBM's Seascope	Hardware and software building blocks; Serial Storage Architecture	Closing gaps in fragmented product line
Sun's Intelligent Storage Network	Storage server Unix chips to tie products; Java software to tie all products	Fragmented product line; software not yet available
Digital's StorageWorks	Common set of tools for all hardware designs	Assimilating Hitachi's 6700 and 7700 high-end arrays into open systems line

software, for easier upgrades and improved product compatibility. But only a handful of products, such as IBM's Virtual Tape Server, have been released.

Called the IBM Cross Platform Extension, the mainframe-to-server product connects with EBC on one side and SCSI on the other. It will allow Unix and

NT servers to store data on IBM's Ramac family of mainframe storage systems. For users of SnapShot Copy software, see page 58

Digital OpenVMS users await fate



Compaq's presence could change a lot of users' ideas about migrating off VMS.

ROB YOUNG
RDP INTERNATIONAL

By Jaikumar Vijayan

COMPAQ COMPUTER CORP.'s proposed takeover of Digital Equipment Corp. will speed the demise of Digital's OpenVMS platform. Or will it?

An increasing number of Digital's 430,000 OpenVMS customers will be grappling with that question during the next few months.

For the moment, users seem willing to accept early claims by

Digital and Compaq that OpenVMS will continue to be supported for the foreseeable future.

But until both companies outline specific plans to support and enhance OpenVMS for the next few years, any optimism will have to be tempered with caution, said Brian Cutler, VMS manager at the State University of New York in Albany. The University's OpenVMS systems support more than 12,000 users.

"I would like to remain bullish about OpenVMS... and I can only hope that [Compaq and Digital stand by] the good

Digital, page 58

PORTABLE DEVICES

Motorola taps Java to join products

► Company expands possible offerings

By Sharon Gaudin

INDUSTRY OBSERVERS say electronics manufacturer Motorola, Inc., will try to take a bigger slice of the corporate communications market by using Java to integrate its various devices, turning them into super communications products.

Only a few weeks after buying an extensive license from Sun Microsystems, Inc. for its family of Java technologies, Motorola is staying tight-lipped on its plans to embed the cross-platform language into its products.

Company officials said only that they expect the first Java-enabled products to ship some time this year and that they hope to tie together Motorola, page 58

Data General server aims for scalability high

► Intel-based server uses NUMA to link up to 64 processors

By Jaikumar Vijayan

WHO SAYS SERVERS based on Intel Corp. chips don't scale? Westbrook, Mass.-based Data General Corp. last week

announced a server that lets users load up to 64 Intel processors in a single box.

Such scalability is intended to give users the processing headroom they need to accommodate fast-growing applications such as data warehousing and transaction processing in a single box.

But users can't order the serv-

er yet. The systems won't start shipping until year's end or later. And most mainstream corporate users won't need that kind of scalability for a while. "This is the kind of insurance that says whatever level of [server] computing power you need, you have it," said Jonathan Eunice, president of Illuminata. Server, page 58

Seascope waits for a breeze

CONTINUED FROM PAGE 27

ware, which runs only on the Rmac Virtual Array, the box can speed back up of Unix and Windows NT data.

Snapshot server Michael Spotts, a business analyst for enterprise storage at State Farm Insurance Co. in Bloomington, Ill., said extending Snapshot Copy to server data may reduce the amount of time his company's data needs to be off-line in order to be backed up.

"With a full implementation of Snapshot, if someone gets in an accident at a a.m. on a weekend, our claims processors won't have to wait to respond," Spotts says. "We are always trying to do a better job of consolidating and managing, so being able to use Snapshot on cross-platform data will have great benefit."

IMPROVED FEATURE

Analysts say IBM's Cross Platform Extension is a big advancement for users familiar with Snapshot.

"Being able to extend the Snapshot approach of virtual data replication to open systems

The IBM announcements and Seascope "bring more choice to the marketplace."

—Bill Brong, PP&L

is a pretty neat concept," said John McArthur, an analyst at International Data Group (IDG) in Framingham, Mass.

But McArthur said users are still awaiting a truly open IBM systems disk array that can start with multiple server platforms before moving up to the mainstream, not the other way around.

"The new IBM announcements, and Seascope overall, are important to me because they bring more choice to the marketplace," said Bill Brong, supervisor of technical development at PP&L, Inc., an electric company in Allentown, Pa.

"Users want more players with cross-platform support because they can bring pricing

pressures. Right now, EMC is having its way with users who don't want to worry about protecting platforms," he said. IDC analyst David Vellante said EMC has almost an 18-month lead on competitors in the open systems market.

"EMC's approach is really simple. It has the one Symmetrix architecture that connects with open systems and mainframes, and all software runs on all Symmetrix arrays," he said. Rivals such as IBM are struggling for this type of coherence," he said.

Vellante said although Seascope is late, IBM can make up lost ground if it delivers an open systems version of the 713 array this year. "Seascope's interconnect technology—Serial Storage Architecture, or SSA—is less expensive than Fibre Channel, and IBM still has better service than its competitors," he said.

The IBM Cross Platform Extension will be in full production by midyear, company officials said. Pricing is not yet available. □

Motorola picks Java

CONTINUED FROM PAGE 27

several products. Schauberg, till-based Motorola makes modems and semiconductors, but it is the company's cellular phones, pagers and smart cards that present opportunities for creating handheld information appliances using Java, industry observers said.

Karen Boucher, an analyst at The Standish Group International, Inc. in Denver, Mass., said Motorola could combine several devices to benefit mobile users.

ONE IS MORE

"With so many more people working on the road and spending so much time away from the office, they need easy access to as much information as possible. And instead of carrying around six different devices, they can have one device and a whole lot more information," Boucher said.

Motorola announced Jan. 26 that it had licensed the Java programming language. Embedded Java, Personal Java and the Java chip from Sun.

JAVA LIFE

Embedded Java and Personal Java are lighter, less memory-intensive versions of Java, which runs in network computer clients.

They were made to run small devices such as pagers and smart phones.

The Java chip was made for smart cards. Those are processors that are embedded in credit

it cards, debit cards, electronic purses and digital identification.

Joan DeLuca, vice president and chief software strategist at Motorola's semiconductor product segment, said traveling businesspeople often have a cell phone, laptop, pager and digital mapping system with them in their car.

It would be easier for the driver to have one device that incorporated paging, voice and text communication, mapping and electronic mail, she said.

Java would fit into Motorola's plans for Internet access on their smart phones or pagers. Leave it to your imagination what they could do.
—Diana Hwang, IDC

Digital OpenVMS users await fate

CONTINUED FROM PAGE 27

things that have been said about [its future]," Cutler said. "We don't know what their true plans are."

The jury is still out on whether Compaq will exploit OpenVMS at the highest end of its server lines or preside over its demise, said Robert Desautels, president of the Harvard Research Group, a Harvard, Mass.-based consultancy.

Although some insist that Compaq will continue to enhance the environment, others question whether it is in Compaq's best long-term interest to support such an aging legacy environment, he said.

The 20-year-old OpenVMS—originally called VMS for the Virtual Memory System that worked with VAX computers—is one of Digital's oldest operating environments. Its installed base, estimated at more than 420,000 systems, is one of Digital's largest and most loyal user bases, historically dominating the Digital Equipment Computer Users Society.

Despite what many users claim is its superior technology in areas such as reliability and

scalability, OpenVMS has been steadily losing ground to Unix and Windows NT during the past few years.

For example, a survey of 250 VMS users, conducted by the Harvard Group before the Compaq takeover, showed that 20% planned to migrate from VMS in the next five years.

I feel very bullish about OpenVMS under Compaq

Reasons for migrating, according to the Harvard Group survey, include the declining numbers of new applications being written for OpenVMS, difficulty in attracting and retaining staff to support OpenVMS-based systems and hardware overhauls caused by the year 2000 problem.

Analysts and users have

blamed Digital for contributing to the migration trend by failing to market OpenVMS effectively and for its strategic focus on Windows NT. In fact, Digital has vigorously promoted an "affinity" program to help OpenVMS users integrate their systems with Windows NT.

SHAKY GROUND

But Compaq's presence could change a lot of users' ideas about migrating off OpenVMS, said Rob Young, VMS cluster manager at BDF International, a freight management company in Philadelphia.

"I feel very bullish about OpenVMS" under Compaq, Young said. "If Compaq is going to compete with IBM or [Hewlett-Packard Co.], they are going to need an operating system" other than NT.

Howard Elias, an executive vice president at Digital, said the company will continue to invest in OpenVMS. "If you were Compaq, would your first move be to abandon a large portion of this customer base" by walking away from OpenVMS? Elias asked. □

Server seeks new level

CONTINUED FROM PAGE 27

Inc., a consultancy in Nashua, N.H.

The Data General servers use a technique called Non-Uniform Memory Access (NUMA) that allows users to link many more processors in a single box and at considerably less cost than traditional architectures such as symmetrical multiprocessing.

WHAT COUNTS

It is NUMA's scalability that led F. M. Webb Co., a Burlington, Mass.-based distributor of heating equipment to consolidate several applications on a four-processor DG NUMA server last year.

Webb recently acquired an-

other company, so the number of users supported on the NUMA server will soon increase by nearly 20% from the current 550 or so, said Larry Mohr, vice president of information systems at Webb.

"In terms of upgradability, I have a very easy task. All I need to do is stick in another four-processor block to get the performance I need," he said.

Audiocon-2, a DG's server will be based on Intel's Decathlon chip. Single systems will be capable of supporting up to 64G bytes of memory, up to 400T bytes of Fibre Channel storage and up to 144 I/O slots. Pricing wasn't disclosed. □

COMPUTERWORLD

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NEW PRODUCTS

ADVANCED LOGIC RESEARCH, INC. has announced the Revolution 2X server with 333-MHz Pentium II processors.

According to the Irvine, Calif., company, the server was designed for work group, departmental LAN and intranet applications.

It incorporates two 333-MHz processors into a symmetrical multiprocessing configuration.

The server also has 32M bytes of memory, 512K bytes of cache, Fast/Wide UltraSCSI and PCI Graphics controllers, a 10M/100M bit/sec. Peripheral Component Interconnect Ethernet adapter card and six expansion slots.

It costs \$2,695.

Advanced Logic Research

(714) 581-6770

www.alr.com

AXIS COMMUNICATIONS, INC. has announced the Axis 700 Network Scan Server, a network peripheral that can provide network access to scanners.

According to the Woburn, Mass., company, the TCP/IP-based peripheral provides network access to existing scanners without requiring a dedicated PC or network file server. It has its own operating system, World Wide Web management software and a RISC-based processor. With the device, users can send scanned images via electronic mail, store scanned images on shared network disks or send images to a network client via a Web browser.

It costs \$1,495.

Axis Communications

(781) 938-1188

www.axis.com

INTERGRAPH CORP. has announced the InterServe 80, a Windows NT-based workgroup server with a modular design.

According to the Huntsville, Ala., company, the server offers single or double 266-MHz Pentium II processors from Intel Corp. It provides eight expansion slots and four SCSI drive bays for up to 16G bytes of storage.

With an expansion base, the server can support 13 slots (including 11 Peripheral Component Interconnect slots) and 250M bytes of disk storage. A 24-speed CD-ROM drive and management software are also included.

Pricing starts at \$4,700 for a base configuration.

Intergraph

(205) 730-8000

www.intergraph.com

SEANIX TECHNOLOGY has announced the Seanote r66, a notebook computer with souped-up multimedia features.

According to the Sioux City, Iowa, company, the notebook ships with a 166-MHz Pentium processor with MMX technology from Intel Corp., 16M bytes of RAM, a 1G-byte hard drive and a 30-speed CD-ROM drive. It has a 13.3-in. screen, 16-bit audio with integrated stereo speakers and two Peripheral Component Interconnect card slots. Memory can be upgraded to 80M bytes. Storage

can be upgraded to 4G bytes.

Pricing starts at \$2,999.

Seanix Technology

(712) 355-3733

www.seanix.com

SONNET TECHNOLOGIES, INC. has announced the Crescendo line of PowerPC 750 (G3) and PowerPC 604E accel-

erator cards.

According to the Irvine, Calif., company, the processor upgrade cards for the first generation of Power Macintosh computers from Apple Computer, Inc. configure themselves to run at the maximum possible speed.

Crescendo G3 upgrade cards for Macintosh 6100, 7100, 8100 and Perform-

61xx systems can boost performance up to eight times. Crescendo 604E upgrade cards can improve system performance up to four times.

G3 pricing starts at \$699. The 604E costs \$499.

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16 Higgins says 65
confidence about being
ready for the year 2000
is finally needed - in
quickened
Page 66

Managing



SPIT AND POLISH

Chris Higgins used
his Army know-how
to transform project
management into a
cultural force at
Bank of America

“Make a decision! Make a decision! People
are dying all around you!”

U.S. Army Lt. Chris Higgins had led
his squad into an ambush and had frozen. “There’s
machine-gun fire, grenade smoke. The drill instructor is in
my face yelling,” he recalls. “I had walked my squad into a
killing zone, and they were all dead.”

Spit and polish, page 66

By Kathleen Melymuka



CONTINUED FROM PAGE 65

Luckily, the killing zone wasn't real; it was part of an exercise during Army maneuvers in Fort Lewis, Wash. But it drilled in to Higgins' head that failure to make a decision can result in death. Living that reality for four years as an Army officer put corporate decisions in perspective, he says. In fact, it seems that everything Higgins needed to know about business, he learned in the Army.

"Value-added structure, process and methodology equals speed and quality."

Higgins' current field of operation is Bank of America Corp., most recently as senior vice president for project management, where he brought a can-do structure and discipline to the make-do world of information systems project management and transformed an informal process at the bank into a cultural force.

"The products and culture he built will survive him," says Liam McGee, group executive vice president for national customer support services at the San Francisco-based bank. "He changed it irreversibly. That's probably the ultimate compliment you can give a manager."

MAKING CHANGES

Higgins came to Bank of America from the former Boston-based Shawmut Bank in 1993 as senior vice president for project management in the payment services (check processing) business. He found a situation typical of many corporations today.

"The way you got into project management was they took the operating people who weren't going to fast-track and said, 'You're not going to be a senior line manager, so why don't you go work in project management?'" he recalls. "You end up with a bunch of people who can't lead, and then the company wonders why multimillion-dollar projects fail."

Higgins mobilized a five-pronged assault on mediocrity, stressing discipline, project structure, tools, training

and leadership. At first, he says, he felt tremendous resistance from his team of 25 project managers, but as they became more effective at their jobs, they realized his way was better.

Higgins' projects came in on time and at or under budget. In fact, he reduced project cycle times 15% to 25% and cut personnel expenses by 10% per year while taking on bigger and more complex projects.

In one time-to-market initiative, Higgins was challenged to cut the development cycle further. To do it, he brought new discipline to the chore of defining project requirements,

teaching businesspeople to translate business processes

into logical processes. That made for clearer, faster definitions of requirements. He also introduced "risk-based testing," which apportions component testing time based on the customer service impact should a component fail. Using those methods, Higgins cut development time in half.

Higgins' innovations drew a lot of attention. "Chris' project management process was unique, and it began to create a contrast between his people and the other so-called project managers in the rest of the company," McGee says. "Other people watched his unit in action and wanted the same skills."

To that end, Higgins was promoted early last year to senior vice president of project management for national customer support services and given a team of 140 project managers and a \$100 million development budget to support five national business lines.

His work also caught the attention of Vice Chairman and Chief Information Officer Marty Seio, who asked him to develop a companywide IS project manager training program. "Chris's commitment to communicating, training and planning really shows up

"Never change the plan unless it's absolutely necessary."

in his end product," Stein says. In his new role, Higgins found that most of the 130 theoretically active projects across the businesses he was supporting were floundering. His team, though tal-

ented, lacked the focus, skills and tools to get things done. "Everybody was trying to do everything," he recalls.

Higgins devised an exercise to teach structure and discipline. He asked his management team, which was structured around the business, to write the names of each of their projects on index cards. Then they all had to lay out the cards to show which order the projects should come in and how they related to one another from a business perspective. It became clear that there were duplicate projects and projects whose core functions could be shared. As a result, 20% of the projects were eliminated.

DISCIPLINE

When you sign on with Higgins, forget about shortcuts. He learned in the Army that taking time on the front end of a project can save time on the back end.

As a quartermaster, for example, when his people had to pack tents, he devised a contest to find the best way to fold a tent and the precise spots to place the pegs and equipment for the quickest possible assembly.

That approach carried over when Higgins led an interstate banking initiative that required him to integrate incompatible check-processing, checking and savings account platforms in various states. By law, the bank had only a year to solve the problem. Though the team was pushing to get to the coding phase quickly, Higgins held it back. He made team members analyze, plan and document requirements for the system in such detail that it took six months to complete that phase. "That was very difficult because when you have only 12 months, it's human nature to say, 'We've got to get going!'" he says.

But the discipline up front enabled developers to do all the coding in only three months, and the project was completed on time.

The message took hold. "He made us live and breathe the discipline he enforced and instilled in us," says Sandy Kolesch, senior vice president of project management for electronic banking. "I've been at Bank of America for 20 years, and I had never experienced the discipline that he instilled

The Higgins File

CHRISTOPHER P. HIGGINS

TIME: National manager for currency services. (He was, until recently, senior vice president, project management.)

Educational: Bachelor of science degree in accounting, University of Vermont; MBA, Pacific Lutheran University.

Philosophy: "Change is all about people, not technology."

Hobbies: Skiing, tennis, running.

across the corporation."

Higgins also conducts himself in a disciplined manner, says Nancy Cloyd, executive vice president for national risk management and a former business customer of Higgins. For example, she says, he always keeps his desk empty of everything except the current task. He says that's because he believes that if his people walk by and his desk is covered, they'll perceive that he's too busy and won't bother him. "That gives you a good im-

"Tools put project managers in a position where they can manage a project instead of just coordinating it."

sight into Chris's own internal discipline," Cloyd says.

STRUCTURE

Higgins' projects are built around a concept he calls building-block automation, an approach he developed as executive officer for the Army's Ranger Support element. His job was to deploy a complex support system, including people, material, supplies and a staging camp, for the elite 650-soldier Ranger Battalion. The tricky part was that the battalion could be called to action at any time in desert, arctic, mountain or jungle conditions, and its supply needs would vary accordingly. The previous executive officer had failed to deploy successfully in 74 hours. Higgins did it in 12.

The key was to determine the core needs for any mission. He prepackaged those supplies into transportable modules, did the same with supplies for each of the four variables, loaded it all into trucks in his warehouse and deployed so quickly that the evalua-

COMPUTERWORLD

This week on our Web site, Chris Higgins shares his views on project management and leadership in an audio interview with Rick Stein, associate editor of

Managing. Visit our Web site at www.computerworld.com.

tors were convinced he had cheated and tested his group again. Ultimately, Higgins' process was adopted as an Army standard.

At Bank of America, when his project managers look at business requirements, they try to discern the core function. That becomes phase one — the foundation on which to build modular enhancements or follow-on projects over time. "Keep it simple" is something I learned in the military," he says. "The simpler it is, the faster I can build it, the better I can train it, and the higher my quality is going to be."

An added benefit is that very often the core project performs better than anticipated, and the bells and whistles aren't needed.

That approach saved a doomed project to automate retail bank cash drawer balancing. Having gone through requirements definition and solution plan, the project

Higgins' people trained 250 project managers in the core curriculum last summer and more during a two-day in-house national project management expo that he sponsored in December. Intermediate and advanced curricula will be available later this year.

"When it comes to training, he walks the talk," says Virginia Allen, vice president and manager of corporate facilitation services and formerly a project manager and trainer under Higgins. "It was very unstructured [before he came]. Chris took me from being fairly efficient to very effective by giving me the right tools, structure and training."

Higgins' passion for training may date from the worst embarrassment of his Army years. He calls it "the event that had the most impact and still does."

As a raw, "butterbar" second lieutenant, Higgins was assigned to lead a training convoy through wooded terrain to a camp site. He mistook a tank trail for a road and ended up leading his men deep into nowhere. "We're talking 18-wheelers, long flat-

lead, forcing him to walk in shame past 50 vehicles and all his soldiers.

Needless to say, Higgins subsequently got the training he needed, and that's the point, he says. The Army provides training and retraining at every juncture in a soldier's career, he says. "That's something that's missing in corporate America. Within my business, I'm trying hard to fix this. By giving people the tools and providing the training, it really puts them in a very powerful position."

DEPLOYING THE TROOPS

A crucial achievement has been Higgins' ability to turn line managers into project owners by requesting line involvement in projects. "We create a void that has to be filled by the line," he explains, "and that creates the ownership lock that's part of our success."

Perhaps the best measure of that success is McGee's decision late last year to decentralize project management and put the proj-

ect managers into the business units. As owner of the bank's proprietary Project Management Process, Higgins will be watching the integrity of the disciplines he

put in place. He says he hopes the new arrangement will encourage line managers to view project management as a normal rotation in the business ranks.

Higgins' career trajectory attests to the rising status of project management at the bank. In December, he was promoted to national manager for currency services, a line job where he'll lead a team of 2,500 people responsible for all the cash at Bank of America.

"I think," Higgins says, "that is a testimony to the bank's senior management's understanding that the skills that make you successful in project management are also the skills that will make you successful in business." □

Melnyk is Computerworld's senior editor/management.

"Discipline could be described as effort."

team determined that the business payoff couldn't justify the high cost of the solution, and the project was about to be scrapped.

But Higgins took another look at the requirements and noticed that a few "non-negotiables" had driven the complexity way up. He worked with the businesspeople to peel off what wasn't truly core in the project's function and ended up creating a new solution that delivered 80% of the original function for 20% of the cost.

TOOLS AND TRAINING

The heart of Higgins' methodology is tools and training. His core curriculum for Bank of America's 15 projects includes communication: effective meeting management; meeting minutes; how to identify, track and resolve issues and use a non-tracking system; how to break project tasks into a logical to-do list and use Microsoft Corp.'s Project to document it; and how to track the financials of a project and use Microsoft's Excel-based templates and spreadsheets as a report card.



Higgins on project leadership

Because project managers don't have direct authority over resources, they have to rely on per-

sonality, charisma and influence — so they have to be leaders, Chris Higgins says.

Higgins models leadership at Bank of America, according to Dave Trade, executive vice president for customer support services and a former business customer.

Trade recalls that when Higgins created his list of attributes of a high-performance team (pictured), he circulated it to staff and business partners. "It was a way of publicly saying, 'This is the way I'll behave, and

hold me to it,'" Trade says. "It was a gutsy call, and it caught on around the division. Mine is sitting right behind me."

"Chris holds himself to a higher standard than he holds other people," says Liam McGee, group executive vice president for national customer support services. "He's about as driven and dedicated a person as I've ever encountered in business. He's honest, intellectually and emotionally. He does the right thing."

— Kathleen Melnyk

Y

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WHERE'S THE BASIS FOR YEAR 2000 OPTIMISM?



think your year 2000 project is under control? Stop kidding yourself.

If you're a CIO, chances are you're telling your CEO and the board that year 2000 is "under control." And your CEO is telling the PR department that the official line is "We're on top of the situation, and we're highly confident that we'll be ready for the new millennium."

But unless your IT organization is one of the few with a strong software development track record, you have no basis for such optimism. It would be better for everyone if you stopped fooling yourself.

CHECK THE TRACK RECORD

You don't agree? Well, here's a simple test: What percentage of all the large, complex IT projects in your organization, during the past five to 10 years, has been delivered on time with the required functionality and with an acceptable level of quality (especially in terms of defects)?

If you can't answer that question, or if you refuse to answer that question, why should your CEO believe your optimistic assessment of finishing your year 2000 project on time? If your IT department's track record for the past five to 10 years has been that 15% of all large projects have been delivered late (by an average of 12 to 24 months), and 25% have been canceled before completion, why should a rational CEO believe that your track record this time is going to be any better? Those figures are "generic" industry figures, compiled from tens of thousands of software projects over the past 30 years by software metrics gurus such as Capers Jones, Howard Rubin and Larry Putnam. If your IT organization has no metrics about the performance of its previous software projects, there's no reason to believe that its performance

on a year 2000 project — likely to be 10 times larger than any previous project ever contemplated by the organization — is going to be any better than the industry average.

Here's another way to look at it: According to the Software Engineering Institute in Pittsburgh, approximately 75% of U.S. IT organizations are at Level 1 on the five-point Capability Maturity Model scale, which measures the "maturity" of an IT organization's software development process (CW, Dec. 15, 1997).

That doesn't mean the organization is populated by primitive savages or incompetent programmers, but it does mean that the organization lacks a formal, disciplined, predictable software process. In terms of predicting the schedule and budget, each project is a "crap shoot" — maybe it will be finished early, maybe it will be late, maybe it will disappear into a black hole.

Only 25% of IT organizations have gotten beyond that: 15% of U.S. organizations are at Level 2, with a "repeatable" (but nevertheless undocumented and fragile) software process, and a little less than 10% are at Level 3, where we could justifiably express confidence in the accuracy of their schedules.

CIOs don't like to acknowledge this pessimistic state of affairs. Most often, they'll change the subject entirely and tell you about the dazzling year 2000 tools they've just acquired for their project team. Or they'll say, "This time, it's different." Why? Because "this time, we know it's important." Oh! Does that mean that none of the projects carried out during the past five to 10 years were important? Even if they weren't important, didn't we organize and manage our projects as if they

were? Why, then, should we believe that the year 2000 projects will fare any better?

THE "WHY" LIST

And if things really are different this time, why have we been managing our year 2000 projects with the same classical mistakes? Why did we procrastinate so long? Why have we elected an arbitrary end date, such as Dec. 31, 1998, without regard to the size and complexity of the projects and then assumed that our project leaders could carry out the usual "backward wishful-thinking" calculations to determine what kind of desperate combination of time and people will possibly provide a successful conclusion? Why have we ignored items that are clearly on the critical path, such as year 2000 compliance of external hardware and software vendors, on the optimistic assumption that there won't be any problems?

George Santayana told us: "Those who cannot remember the past are condemned to repeat it." Year 2000 project teams ignore that maxim at their peril. This does not mean that the CEO or CIO should expect utter defeat in their year 2000 efforts, but it does mean that blissful optimism is inappropriate, to say the least.

It also suggests, quite strongly, that contingency planning is of paramount importance. As more and more year 2000 experts are beginning to say, "Hope for the best, but prepare for the worst." □

Yourdon heads up the Y2K Advisory Service at the Cutter Consortium in Arlington, Mass. His most recent book is *Time Bomb 2000*. He can be reached via E-mail at rd@yourdon.com.

What's in a title? Clout

A title goes a long way if you head an information systems department in a health care organization.

If the words "chief information officer" appear in your title, the odds go up that you attend board meetings and are a member of your organization's board.

So says a recent survey of 512 health care CIOs by the College of Healthcare Information Management Executives in Ann Arbor, Mich. The results found that only 11% of IS leaders without the CIO title were part of the executive cabinet while 64% of CIOs were. That percentage is higher if the CIO also bears the title of vice president.

Directors are just as likely as CIOs to have developed a strategic plan in the past three years. Yet CIOs are likely to oversee much higher capital and operating budgets. The average operating budget overseen by a director is nearly \$1.9 million; for a CIO, it's at least \$1.48 million. The average capital budget for a director is \$1.65 million; for a CIO, it's at least \$4.74 million.

Health and politics

Attendees at next week's annual conference of the Healthcare Information and Management Systems Society in Orlando, Fla., may get a preview of the presidential campaign in 2000.

Two possible candidates, former New Jersey senator Bill Bradley, a Democrat, and ex-Labor Secretary Elizabeth Dole, a Republican who now heads the American Red Cross, will deliver two of the five main addresses to nearly 20,000 leaders in health care.



fyi.

Review Center

Assistive technologies

By Laura DiDio and Julia King

EVENTS SUCH as Windows 95 and the emergence of the World Wide Web in the past three years have changed the way most American workers deal with their computers.

Yet for 7 million American workers with disabilities, such breakthroughs have meant much more. New technologies have often meant that those employees could take on jobs that previously were beyond their reach — although some technologies also raise new barriers to the disabled.

Assistive hardware devices and software packages are leveling the playing field in the workplace. They let disabled workers move into the mainstream workforce — away from the menial jobs into which many disabled workers traditionally have been shoved — and perform their work as capably as those without afflictions. And assistive technologies can help managers address the

information technology skills shortage by tapping the potential of blind, paralyzed or otherwise disabled programmers.

Rapid technology advancements, increasing Internet usage and the ongoing problems associated with the graphical user interface (GUI) issue (see related story, page 70) have galvanized the government and academic and private sectors to push for new "universal inclusion" products. Despite the gains, there are ongoing problems. One such challenge is building a GUI suitable for all types of users. Another is the move to visual programming tools, which essentially can't be used by blind programmers.

"In the last two years, the industry has spawned more third-party add-on assistive devices than it has in the last decade. Now we're pushing to have support

Ready and Enabled, page 70

EMPLOYEES WITH DISABILITIES ARE REAPING THE BENEFITS OF NEW CORPORATE ATTITUDES AND COMPUTER TECHNOLOGY. BUT THERE ARE STILL MILES TO GO . . .

READY and ENABLED



Ryan Stevens, a visually impaired programmer, uses a screen magnification program to view data on his computer.

READY and ENABLED

CONTINUED FROM PAGE 69

built directly into applications and operating systems to make technology even more inclusive for the handicapped and learning disabled," says Chuck Hatchcock, director of development at the Center for Applied Special Technology, Inc. in Peabody, Mass. In the past two years, for instance, Microsoft Corp. — under pressure from various handicapped organizations — enhanced Windows 95 with several built-in assistive technology settings.

The advances in IT have helped immeasurably, though. The users Computerworld spoke with said that without the relatively recent assistive devices, they wouldn't be able to do their jobs because of cognitive and physical disabilities.

CASE BY CASE

Elliot Cole is an example of those who have been instrumental in helping the disabled. He is a researcher at the University of Pennsylvania and founder of the Institute for Cognitive Prosthetics in Ralaz Cynwyd, Pa. Cole creates customized systems for people with brain injuries.

Doug McClintock, who suffered traumatic head injuries in an automobile crash seven years ago, has benefited from Cole's innovations. Cole developed a PC-based system that helps McClintock plan schedules and organize tasks — capabilities that allowed McClintock to leave a job making bagel chips in a sheltered workshop for his current post as a rehabilitation specialist and manager of a group home. Prior to his accident, McClintock had headed the Pennsylvania Redevelopment Agency.

"People with brain injuries have an unusual combination of abilities and deficits, all of which vary from person to person," Cole says. That requires the creation of one-of-a-kind systems or, more recently, the

Bill Acker, blind since birth, uses IBM's OS/2 Warp 4 operating system with built-in voice recognition along with an add-on IBM Screen Reader and speech synthesizer to help him do his job as one of its database administrators at US West Communications, Inc.

"Without this technology, I simply couldn't do my job," Acker says. Luckily, OS/2 Warp's voice recognition features and the Screen Reader let Acker work from home or office directing the text on-screen to conduct World Wide Web searches and get volumes of text read to him.

When Acker began his career at Mountain Bell — now US West Communications — there were no PCs, and he ran up against prejudice because of his blindness. "I started out in operator services, which was 16 months of hell. I did as little as they could find for me to do. They only used about 1% of my abilities. With the advent of information technology, I was able to transfer to the network service center, and I was never treated like a handicapped person again," Acker says.

Ryan Stevens, a visually impaired computer programmer, has experienced firsthand what he describes as "a fear factor" among potential employers. During job interviews, "I had a feeling I had to prove myself more than a sighted programmer," says Stevens, who now works as a programmer and trainer at AbleLink, a \$2 million IT services company in Aston, Pa.

About 75% of AbleLink's programmers, systems analysts and software developers are disabled and use assistive technology to do their jobs. Stevens' equipment includes a 20-in. monitor and text-magnification software that enlarges screen-based data to four times its standard size. For software manuals and other documents, Stevens uses a camera-based system that enlarges and projects the print onto his computer screen.

Such tales are becoming more common, says Susan Brummel, director of the General Services Administration's Center for Information Technology Accommodation (CITA) in Washington. "Not only is technology leveling the playing field [for the disabled], but participation of disabled workers is actually accelerating the development of new software and hardware products," Brummel says.

Ray Pelouquin's cerebral palsy has severely restricted his speech and range of motion. To communicate, he uses the DynaVox communication system from Pittsburgh-based Sentient Systems Technology, Inc.

More than just a pretty interface

It's virtually impossible to talk about how advances in IT have empowered disabled workers without also examining the demands of IT the ongoing debate over GUIs.

GUIs contain many symbolic cues that make them difficult for screen readers to decipher. "The GUI is designed for sighted people. If you can't see, you can't use a mouse or a keyboard," says Gregg Vanderheiden, director of the Texas Research and Development Center at the University of Wisconsin at Madison.

The situation reached the crisis stage in the summer of 1995, when Microsoft released its GUI-based Windows 95 operating system. "We found that blind and visually impaired computer users were facing virtual extinction," says Susan Brummel, director of CITA.

Then, along with government agencies such as the National Science Foundation, was a Univer-

sity of Texas at Austin program to ensure that most government computers and computing environments can be used "from anywhere, at anytime, by anyone," Vanderheiden says.

To put events behind this effort, Texas, CITA, the National Council on Disability and other organizations intensified their efforts to pressure Microsoft and other vendors into making their GUIs accessible to the vision-impaired.

Microsoft acquiesced, including company Chairman Bill Gates' endorsement. The Access Accessibility features now in Windows 95 and Windows NT let the screen reader talk the operating system for descriptive information on the screen.

But the path to universal accessibility hasn't been smooth. Many third-party vendors created screen readers to work with Windows. But with each new version of Windows, the screen readers were rendered obsolete.

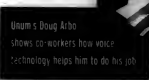
Microsoft's latest Active Accessibility features ensure better connectivity between current screen readers and Windows 95. "It's an improvement, but it still falls short of the mark."

Active Accessibility only works if the application also includes built-in descriptive information about GUI controls," Vanderheiden says.

Then vendors such as IBM, Sun Microsystems, Inc. and Microsoft are looking to build an auxiliary type of GUI called a User Subsystem (USUB). "The USUB would let a sighted person, for example, drive his car and still use the computer on the seat next to him without taking his eyes off the road," Vanderheiden says.

That type of functionality is already beginning to appear.

Microsoft recently announced its Auto PC, and the Palm PC has the ability to take decisions, although it lacks a speech interface. — Laura DIXON



ABOUT OUR ARBO

SHOWS CO-WORKERS HOW voice technology helps him to do his job

customization of off-the-shelf packages, such as word processing or scheduling software, to accommodate a person's abilities.

A memory-impaired individual, for example, may require very descriptive file names to recall electronic documents. To accommodate that person, Cole has revamped a word processing package to accept file names that are longer than the eight-character standard. And he did it years before Microsoft added long file names to Windows 95.

The system, which comprises an electronic notebook computer display, touch panel, speech synthesizer and language processing software, is Pelouquin's interface to the world. Using either his foot or a head wand, he can point to the system's 2,000-plus icons to do everything from order food in a restaurant to compose an electronic mail message.

A computer programmer by training, Pelouquin has used the device to independently develop a PC-based apartment rental program. The new technology essentially less him communicate.

To date, Pelouquin hasn't worked at a company or outside his home in Tampa, Fla. But with this technology he could work, for example, in a team setting which required communication with other programmers, managers, users, etc. Pelouquin also operates a Web-based greeting card company from his home.

LAW ON THEIR SIDE

On the legislative side, the Americans with Disabilities Act of 1990 and the Technology-Related Assistance for Individuals with Disabilities Act of 1994 were designed to safeguard the rights of the disabled in the workplace. And the Technology Act of 1996 provides assistance to state for the development of consumer-responsive statewide programs for assistive technology services.

Those laws helped Susan Ference, a quadriplegic as a result of a diving acci-

dent when she was 19, get trained as a computer programmer. After her 1981 injury, the Texas Rehabilitation Commission in Dallas paid for Ference to attend El Centro Community College, also in Dallas, where she took courses in computer programming and programming for the physically handicapped. She has been a programmer at Greyhound Bus Lines, Inc. in Dallas for the past five years.

"Today, we're finally at a place where smart vendors are listening to and working with people with disabilities," Brummel says. "We're tipping the balance, but it's taken decades."

But the cautions, "We're still not in the clear." More must be done to include assistive technology in the baseline operating systems, applications and PC hardware and peripherals, she says.

And of course, the industry must still overcome the greatest hurdle of all: human prejudice, Brummel says.

Pelouquin wrote via E-mail: "Employers are scared of people like myself. They can't take the time for disabled people. You can have all the high-tech equipment you want, but if people in the workplace are unable to accept a person with a disability, what good is all that high technology?"

DIXON is Computerworld's senior editor, operating systems and security. King is Computerworld's national correspondent, systems integration and outsourcing.



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HELPING HANDS:

A sampling of technologies for the disabled

any products and technologies can be described as assistive technologies. The following are products that an IS manager might provide to disabled users, and an update on how mainstream computer products work for people with disabilities.

Screen readers, synthesizers

These technologies pair up to bring the world of computing to the blind. There are a dozen or more products in each category.

Screen readers translate a computer's video signals into text as words, numbers, punctuation marks and labels. The synthesizer then turns the text into a computerized voice feed that is humanlike, if a bit robotic.

A recent breakthrough in this area has been the move to software-based synthesizers, says Jay D. Leventhal, a senior resource specialist at the American Foundation for the Blind's (AFB) technology center in New York. Dating back 15 years, most synthesizers used dedicated hardware that ran the cost of most products into the \$1,000 to \$2,000 range. Software-based synthesizers promise to reduce costs to a few hundred dollars because they work with the standard sound cards found on most PCs.

"We are on the verge of software synthesizers taking over. But the thing with software synthesizers is that they need a lot of commands to control them compared to hardware-based synthesizers," says Leventhal, whose organization (www.afb.org) evaluates assistive technologies for the blind.

AFB resource specialist Crista Earl, who like Leventhal is blind, notes that screen readers use keep running into new challenges as computer technology evolves, and blind users try to take advantage of the new world opened up to them by Internet electronic mail and on-line information. "The big problem when you are in a screen reader is how it reacts to Windows applications. There are a lot of access problems, and it's an ongoing battle," she says.

When developers use nonstandard controls, the screen reader can misidentify a visual element as seemingly simple as a button or an image map on a World Wide Web page. That can happen with programs built by end-user companies and vendors. Earl cites Qualcomm Inc.'s Eudora Pro and Corel Corp.'s WordPerfect as examples of products that work well with screen readers. She says Microsoft Corp.'s Encarta and Access are examples of products that present problems for the blind. Visual programming tools, because of their very nature, present problems for the many blind programmers in IS.

Screen magnification

This technology is useful for computer users who have low-vision problems. Screen magnification starts with the ability to increase type size through the Windows control panel and extends to sophisticated magnification products that can be paired with a screen reader. Magnification software enlarges whatever images or text the cursor hits as it tracks across the screen. It costs \$80 to \$600. The magnification/screen reader combinations may be best suited for employees who are losing their sight, says Mark Usilan, manager of technical evaluation services at the AFB.

Closed-circuit TV/scanners

Closed-circuit TV (CCTV) devices help low-vision users see text and images on paper or labels through their computer monitors, in combination with screen magnifiers.

Lower-cost CCTV systems that plug into standard TVs cost between \$400 and \$1,000. But users can expect to pay \$1,800 to \$4,000 for CCTV systems that tie in to a PC, according to the AFB.

Scanners, particularly those that are equipped with optical character recognition software, are a basic tool for blind computer users. Scanners will let blind users move written correspondence, reports and business cards into their computers, where the screen reader can take over.

Notetakers, Braille printers

Notetakers let blind employees type in notes during meetings and then feed those notes into a computer for conversion to speech or text output. Somewhat larger than handheld computers, basic notetakers cost between \$1,000 and \$1,500. They are available from a half-dozen vendors.

Braille printers, sold by about 20 vendors, are basic output devices for computer users who have been trained in Braille—typically people who learned Braille as children, according to the AFB.

The devices can be loud and have had relatively few improvements in recent years: paper-saving double-sided printing is one newer, useful option. Low-end or personal printers cost about \$1,500, while office printers cost between \$1,500 and \$10,000.

As with printers, Braille displays are suited for a limited number of blind users. A screen reader's output is converted into Braille characters through a series of pushpin combinations that the user feels on a keyboard-like device.

Recent breakthroughs extend the display from 40 to 80 characters and have added navigation buttons. A 40-character display costs between \$1,000 and \$6,000.

Speech recognition software

Don't look for Star Trek-style voice control—you know, the one where Captain Kirk says, "Computer, give me all information on Spock's great-grandmother." But voice technology has taken major strides in the past year with the release of more "natural language" dictation products.

There are products, such as Dragon Systems, Inc.'s Naturally Speaking and IBM's ViaVoice, that let you dictate memos and reports with continuous speech as you would to a stenographer. The products aren't ready to take conversation-speed in-

put. But they are a mile ahead of their predecessors, which used "discrete" voice recognition that essentially required you to pause after every word. The natural language software lets you dictate into and manage a limited number of applications. It costs between \$100 and \$250.

The IS view

Umm Life Insurance Co. of America, the largest affiliate of Umm Corp. in Portland, Maine, prides itself on being at the forefront of diversity hiring practices.

And while Umm is proud of that record and the contribution of its handicapped workers, the company's IS department found it had a lot to learn about providing technical support for sensitive devices, according to Blake Penn, Umm's project manager for distributed implementation and support team. He says the IS help desk wasn't familiar with communication sensitive technologies, such as a screen reader used by one blind programmer.

"We lacked the ability to adequately support the products some of our people were using," Penn says. "And when it took two days or two weeks to fix the PC of a blind or paralyzed programmer, Umm lost the services of that programmer and the support person."

To solve the support issues and minimize downtime, Umm launched its Extended Requirements Workstation (ERW) project. The first phase of the ERW project concentrated on voice-recognition software, speech-recognition technology and screen readers. That enabled identifying preferred vendors and setting up special support contracts that let handicapped users bypass the company's help desk and instead get support directly from the vendor.

—James M. Connolly
and Laura D'Adda



But don't confuse voice dictation with voice navigation technology. The former lets you enter data; the latter helps you open, close and manage most Windows applications. Both product types may appear as stand-alone applications or may be bundled into a vertical application or system software, as in IBM's OS/2 Warp.

Vendors push speech recognition software for all types of users who want hands-free computer access. But it can prove exceptionally valuable for anyone who has lost the use of their hands.

Think of it as a tool not only for employees with spinal cord injuries or amputees but also for people suffering from limitations such as carpal tunnel syndrome.

For Doug Arbo, a programmer analyst at Unum Life Insurance Co. in Portland, Maine, voice recognition software—Dragon Dictate specifically—meant that, as a quadriplegic with minimal use of his hands, he could stop using a pen to hunt and peck on his keyboard.

"When I have to write a document or jot down notes, I might still be slow, but I'm more verbose. I can use words of more than three letters, and I can do at least 60 words a minute," Arbo says.

The computer as a telephone

People with limited speech capabilities can turn their computer into a phone, with products such as Microsystems Software, Inc.'s (www.handicare.com) HandiChat and HandiPhone. With HandiChat, users can enter text by keyboard or other input device, and the system converts it to speech for transmission to other users. HandiPhone helps users dial numbers from an online phone book and carry on a conversation through a headset. HandiChat costs from \$149 to \$295, and HandiPhone costs \$295.

Tools for the hearing impaired

Several vendors offer software/modem combinations that let hearing-impaired users convert their PCs into a Telecommunications Device for the Deaf systems. The packages cost about \$300. Also coming onto the market are handheld notetakers that workers can use to record conversa-

tions during meetings and then plug in to the printer port on their PC for conversion to text.

On the free side, computer users with hearing loss can use PC and Macintosh operating system-based features such as the Windows 95 control panel's Show Sounds option to replace the "beep" warning on error messages with visual messages.

Special navigation software

The physically disabled user who can't handle a mouse may be able to navigate through computer screens using the combination of on-screen commands and devices such as switches, trackballs and joysticks.

One example of the software is Academic Software, Inc.'s (www.acadsci.com) WinScan (\$349), which places navigational icons on the screen. The user activates the icons using a simple, bundled switch.

Another example of software that helps the physically disabled who have difficulty typing is a next-word prediction capability in Aurora Systems, Inc.'s (www.ditech.com/aurora) Aurora 2 (\$490). As you type, Aurora looks at the context and offers suggestions for your next word.

Special input devices

There's a broad range of input devices, some of which can be customized for physically disabled computer users. Examples include pedals that take the place of ALT, SHIFT and CTRL keys on a keyboard, light pointers, pen-shaped mice, and alternative keyboards.

An example of an alternative keyboard is IntelliKeys (about \$400) from IntelliTools, Inc. (www.intellitools.com). It is a tablet-style keyboard on which the user taps icons, letters or numbers to send input to the PC.

Microsoft's Windows 95 package, such as Dragon NaturallySpeaking, speaking notepad, computer-assisted workers, and other their hard-

ware packages. The latter two require a fast 386-compatible or better 5-Speed processor and 16MB of RAM.

Switches, available from many vendors, are electronic devices that can be programmed to trigger a specific function on a PC when one of a limited number of buttons are pushed. They were designed to work with navigational software. The actual switches may cost about \$50.□

—James M. Connolly
and Amy Malloy

FOR MORE INFORMATION

- 1. NATIONAL COUNCIL ON DISABILITY** (www.ncd.gov/)
Contains the Council's publications.
- 2. NATIONAL INSTITUTE ON DISABILITY AND REHABILITATION RESEARCH** (www.ed.gov/office/OSERS/NIDRR)
Provides a comprehensive listing of organizations that assist the disabled.
- 3. IN THE BLINK OF AN EYE** (www.golden.net/~blink/main.htm)
Offers a directory of sites for the visually impaired.
- 4. AMERICAN FOUNDATION FOR THE BLIND** (www.afb.org)
Supplies reports, links, newsletters and other information.
- 5. DEAF WORLD WEB** (<http://deafworldweb.org/>)
Features a finger-spelling guide, links to "Deaf History," and job postings.
- 6. DISABILITY RESOURCES FROM EVAN KEMP ASSOCIATES** (<http://disability.com>)
Commercial site that offers tips, products and services for the disabled.
- 7. YURI** (www.yuri.org/webable)
A directory of disability resources, conference listings and articles.
- 8. TRACE** (www.trace.wisc.edu/trace/program.html)
University of Wisconsin Web site that provides the disabled with assistance in searching for resources and devices.
- 9. ALLIANCE FOR TECHNOLOGY ACCESS** (www.ataccess.org)
Offers contact information, product information and links to related sites.
- 10. ABLEDATA** (www.abledata.com)
Offers a database that has information on more than 25,000 products.
- 11. CENTER FOR APPLIED SPECIAL TECHNOLOGY** (www.casat.org)
Lists programs, resources and online reports for disabled workers.

In Depth

Is Windows

O BY WILLIAM BLUNDON

BE ONE CALL my psychiatrist and order up a dose of Thorazine. How can anyone in his right mind claim that Windows is dead?

Well, as the *Money* Python skit went: "It's not completely dead. But it's not at all well."

Let's start out with all those greivances. Yes, Microsoft Corp.'s Windows ships on more than 80% of all computers. Yes, Windows CE is becoming popular on a new generation of palm-top devices. Yes, Windows CE is set to ship with as many as 5 million cable set-top boxes next year. And yes, Windows will even survive the righteous anger of Judge Thomas Penfield Jackson.

Still, Windows is not at all well. Here's why:

First, I'll handle the fish in the barrel. Windows is too hard. It's a great operating system for those

who believe an operating system is important

Windows is too expensive. "What?" you snort. "It's bundled with PCs. Upgrades cost less than \$100. How can it be too expensive?"

First, it requires a minimum hardware investment of \$1,000. Second, it requires many hours of instruction before novice users become productive. Third, it requires expensive applications software to be useful.

Windows is too difficult to maintain. The life-cycle cost of Windows is many times greater than the initial purchase price. If you've ever modified your Windows registry, you know the true nature of pain.

"OK," you say. "Clever arguments. Still, Windows is the heart of the information economy."

Not for long. It's losing relevance. Why?

The network is the computer. The real value in computers is in applications software and content

— the things users need to be productive and entertained. Everything else is plumbing and overhead. Computers are about to become more like telephones. Why?

The server is the network. If I use Windows to write *Computerworld* columns and read my electronic mail, why do I spend as much money for those basic services as I did when I wrote software for a living? Why must I wait for Windows to boot up to read my E-mail or write a letter? Why do I have to know about ScanDisk? I want to use the software that I want when I want it — and I'm only willing to pay for that use. Give me services the way the telephone company does. Let me hit *69. Charge me 50 cents and go away.

Applications are the center of the universe. Even information workers do not "use" Windows. They put up with Windows to use the applications they need to do their job. Applications, not Windows, have value.

Politicians smell blood. Even before the U.S. Department of Justice actually got to court, Ralph Nader, the U.S. Senate and six state attorneys general all pounced on Microsoft. Why? Simple: That's where the klieg lights are shining.

The company's truce with the Justice Department is uneasy and temporary; just as IBM's long antitrust battle gave birth to the applications-software industry, Microsoft will never really be free of the feds.

The squandered computer. There's a dirty little secret in the corporate IS community. There is no correlation between information technology spending and any recognized measure of success, such as profit, revenue per employee and so on. Once corporations wrestle the year 2000 problem to the ground, that will be the major issue in the IT world. Heads will roll, and Windows will be a major scapegoat.

The operating system is dead. It's not just Windows, of course. It's Unix and Mac OS and MVS. Operating systems are not the center of the universe; they are difficult, expensive plumbing. I don't want Windows. I want Windows Inside — elegant technology carefully buried under the covers where I don't have to see it. I'll be happy to pay Microsoft — but only when I'm using the company's software.

That's it. Enjoy your medication. □

Blundon is executive vice president of the Extraprise Group, a Boston firm. He was previously chief operating officer of SourceCraft, Inc., a developer of Java-based intranet development tools. He has also worked at Object Design, Inc. and Group Bull. He is a columnist for JavaWorld magazine and writes for other Internet-related publications.



IT'S FADING FAST.

The network computer, blood-thirsty politicians and its own girth will do it in.

DEAD?

**SOUND
OFF!**

W BY ROB ENDERLE

WINDOWS DEAD? Oh, come on.

You're telling me a product that generates \$4 billion in direct (and more than \$8 billion in indirect) revenue annually, and continues to grow in some broad segments more than 100% year over year, is dead?

I'm not bashful about administering last rites. I called Mac OS dead months before Apple began to fail financially. I called OS/2 dead in the face of IBM's claims that it was alive. I was one of the first to forecast the decline of Novell's NetWare.

And believe me, Windows isn't even sick.

The success of the PC market largely stems from a common operating system, controlled by a software-only vendor that didn't compete with its customers. That drove PC clones to thrive, companies to buy on price, and prices to drop. The product that started out as DOS and became Windows is that common operating system.

You can certainly argue that IBM fell dramatically from a similar elevated position. Analyzing that IBM failure was a passion of mine when I worked there in the early 1990s. The event that launched IBM's failure was not an antitrust investigation, but the departure of Thomas Watson Jr. From that point, IBM became a bureaucracy more focused on internal problems than on customers or markets. That caused IBM's downfall.

Bill Gates, the Microsoft equivalent of Thomas Watson Jr., remains in place and — as demonstrated by the company's recent about-face embrace of the Internet — he continues to prove himself fully capable of guiding the company.

Look at the companies targeting Microsoft: Oracle, Netscape, Sun, Novell and parts of IBM. They can't sustain a fight. Netscape and Novell don't have the resources and often are their own worst enemies. IBM software is crippled by being tied to IBM, which is primarily a hardware company. Sun also faces that hardware problem, so it can't get Microsoft-style deep third-party support from hardware manufacturers.

Oracle is a software company and has the resources to fight. But surveys show that information systems managers fear Oracle more than Microsoft. That makes a switch unlikely, even if Oracle offered a comparable operating system.

Alone, none of those companies can topple Microsoft.

And when they band together — or try to — things get even worse. Competitors simply make poor partners. Look at Apple's recent disastrous cloning efforts — hardware companies can't be trusted partners with other hardware companies.

You'll note that I'm not arguing that Java,

Netscape Navigator or whatever is better or worse than Microsoft's offerings. I recall arguments — often compelling — that software from Atari, Commodore, Apple and IBM was better than the then-current version of Windows. Maybe it was. Maybe it still is. Technology simply hasn't made much of a difference. Microsoft can move between vendors without being a threat, and Windows enjoys a crushing installed base.

And the feds, as they did with IBM, are more likely to boost foreign competitors (Fujitsu, Hitachi) than to create a viable U.S. alternative.

Some argue that the IBM consent decree created the applications-software industry and that Microsoft's present battle with the feds may create similar spin-offs. But that contention ignores the fact that in the 1980s, IBM and Microsoft each sold a version of DOS, and the buying behavior that moved the market to Microsoft had

nothing to do with the consent decree and everything to do with IBM being a hardware company.

Now, Windows CE is moving strongly into the space created by the network computer. Microsoft has embraced Java, and the litigation between Sun and Microsoft seems to be scaring potential developers off (which is likely why Sun has stopped marketing that litigation).

Perhaps Microsoft's image has slipped as a result of the company's various legal tangles, but there simply is no product or company well-positioned to take advantage of that weakness. Windows dead? Windows will dance on the grave of many a competitor. ☐

Enderle is area director for desktop technology at Giga Information Group. He has 25 years of experience in the IT field and has held senior positions at Dataquest, IBM, Siemens AG and Rolm Corp.

YOU'VE GOT TO
BE KIDDING.

It generates
\$4 billion per year.
Like it or not,
Windows is alive
and kicking.

IBM Corp.



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IT Careers

BADGE of GLORY



Technical certifications are still the ticket to better jobs and higher salaries, but the Microsoft Certified Systems Engineer certificate is by far the most prized

By Jill Vitello

IN MEL BROOKS' campy, classic movie *Blazing Saddles*, a gang of bandits is asked to show its badges before being admitted into a brawl. "Badges?" sneers the heavily armed gang leader. "We don't need no stinkin' badges!"

That's the attitude of some information systems professionals. In today's tight job market, IS professionals with the most sought-after skills may meet at the notion of proving their worth with a badge of certification in their specialties. The well-publicized IS skills shortage has made this the can-

increase salary offers by as much as \$10,000, according to technical recruiters across the country. That makes certification still worth the investment, and here are the ones the experts say most deserve attention.

CERTIFICATION OF TITANIC PROPORTIONS

The Microsoft Certified Systems Engineer (MCSE) designation is the hottest, most popular IS certification available. People from all corners of the industry — recruiters, trainers and IS hiring managers — agree that the MCSE is today's premier certification.

The MCSE is for network professionals who want to prove their qualifications for planning, implementing, maintaining and supporting IS in a wide range of computing environments using Microsoft Corp.'s Windows NT and RackOffice.

"The MCSE is today's hot ticket," says Alan Salisbury, president of Learning Tree International in Reston, Va. "It's what the CNE [Certified Novell Engineer] was three years ago," to accommodate the huge demand for the MCSE. Salisbury says his company must offer the required courses on a weekly basis in its Washington locations and has increased its course offerings at other sites.

Novell, Inc.'s success with its certification programs paved the way for other vendors to promote certification of their product lines, Salisbury says. Now, IS professionals can become certified in everything from Cisco Systems, Inc. routers to Java programming. Yet even with all the options available, the MCSE still rules.

"NT is the El Nino of LANs," says Rich Wonder, president of Richard Wonder and Associates, an IS recruiting firm in New York, explaining the trend. As Windows NT eclipses Novell, the MCSE designation is displacing the CNE in importance.

"Six months ago, the MCSE was a nice extra; now the certification is a requirement" for many high-profile positions in IS shops across the country, Wonder says.

Even when IS hiring managers don't require a Windows NT-experienced professional to have an MCSE, the certificate can snare a job candidate an extra \$10,000 in starting salary, says Julian Gonzales, a technical recruiter associated with The Livingston Consulting Group in West Orange, N.J.

"The MCSE lets prospective employers know the candidate is qualified to do the job," Gonzales says.

BEST SUPPORTING CERTIFICATIONS

Although the MCSE takes the gold among IS certifications, there are two others that continue to be popular with ambitious IS professionals and hiring managers: CNE and the Lotus Development Corp. Notes/Domino Certified Professional. Both certification programs involve about the same length of time, cost and rigorous study and examination as the MCSE requires.

IS professionals can go directly to the vendors to sign up for courses toward certification, or they can go to certification third-party trainers. Certification through the vendor companies comes with perks such as invitations to conferences, technical training sessions and free magazine subscriptions. But independent training companies say

Badge, page 79

A Certification Sampler

MICROSOFT

- Microsoft Certified Professional
- Microsoft Certified Systems Engineer
- Microsoft Certified Solution Provider
- Microsoft Certified Professional
- Internet
- Microsoft Certified Systems Engineer
- Internet
- Microsoft Certified Trainer

NOVELL

- Certified Novell Education Information
- Certified Internet Professional
- Certified Novell Administrator
- Certified Novell Engineer (CNE)
- Master CNE
- Certified Novell Instructor

OTHER VENDORS/INTRA-ENTERPRISE

- LANs
- TCP/IP
- Internetworking
- Class routers
- Wide-area networks
- LANs
- Telecommunications systems
- Systems and network security
- PC services and support
- Client/server systems
- SQL Server DBA
- Oracle DBA
- Oracle application development
- Overall application development
- Lotus Notes/Domino
- C and C++ programming
- C++ object-oriented programming
- Java programming
- Windows application development
- Windows NT Web development
- Windows programming
- Software development
- Unix systems
- Unix programming
- All Microsoft Windows NT certifications

Microsoft Certified Systems Engineer (MCSE)

TECHNOLOGY: Windows NT systems and networks

TRAINING TIME: Most IT professionals take classes and pass exams in 12 to 18 months

DELIVERY METHOD: Hands-on classroom courses, CD-ROM self-study courses and exam preparation material

COST: Varies — self-study material starts at about \$100; full range of certification courses can run about \$10,000

AVAILABILITY: Ubiquitous — training companies offer them across the country

MARKET DEMAND: High demand

didate's market of all time. With their pick of so many jobs, why would IS professionals want to go through the trouble of getting certified?

For the usual reasons, of course — fame and fortune. Some certifications can be an instant ticket to the most visible IS opportunities. And they can

IT CAREERS

spearhead

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BADGE of GLORY

CONTINUED FROM PAGE 27

their organizations provide IS professionals with a more objective, real-life experience that teaches them how to overcome product weaknesses, which vendors don't address in their courses.

"For those IS professionals who are honed in on one technology and are interested in becoming narrow but deep, certification can ramp up salaries and opportunities," says Paul Villalta, managing director of Source Services in Vienna, Va.

Some IS managers will pay to train and certify one or two staffers. The certification identifies them as leaders in hot technology such as Notes, TCP/IP or Oracle Corp. client/server applications such as Oracle Financials software. They are expected to share their knowledge with colleagues and take the lead on projects and problems related to their technologies.

"As head of the database here, I'm expected to coach, mentor and counsel on all things technical. Being certified helps me get knowledge quickly and use it on

the job," says Barbara Horn, supervisor of the data management team at JM in Austin, Texas. She holds the Microsoft Certified Professional designation plus certifications in Microsoft Windows NT servers, Workstation and SQL Server Administration.

Even though Horn isn't directly responsible for managing the servers, she earned her NT certification to understand the environment in which the database runs and to boost her troubleshooting skills.

Horn is considered a resource by a wide range of her JM IS colleagues. She earned her certificates using a self-study approach and crammed for exams on her own. The total cost to JM was \$100 for each set of study materials and \$100 for each exam.

Corporate sponsorship of IS certification has proved cost-effective. A recent survey of IS managers, conducted by International Data Corp. in Framingham, Mass., shows that information technology certification has a significant positive effect on IS productivity and network uptime, particularly in sophisticated client/server environments.

Certification also makes sense for consultants and contractors who need to prove their competence in the time it

takes a prospective client to glance at their resumes.

"Certificates look good on resumes and on walls," says Susan J. Goldberg, president of Northeast Training Group, Inc. in Newton, Mass. "People put their certificates in their cubicles. Certification is like a college degree: It doesn't necessarily make you a better IS professional, but it shows that you've achieved a standard by which the industry can measure you."

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THE SLEEPER CERTIFICATION

What happens when a certified technology falls out of favor, Villalta wonders, as do thousands of CNE holders whose shops are migrating to Windows NT. Their knowledge base is useful through the transition, but then what?

To guard against the inevitable obsolescence of a product-specific certification, the Institute for Certification of Computing Professionals grants the Certified Computing Professional (CCP) designation. It's for experienced IS professionals who pass a battery of exams in their choice of 11 broad cate-

gories, including security, software engineering and systems development. This year, the institute will celebrate its 25th year of granting the CCP to IS professionals worldwide.

Although institute officials claim that the CCP is the "capstone" certificate, it isn't widely requested by IS hiring managers, recruiters say. "We've talked about industry certification since the early 1970s, and it's just never gained favor," Goldberg says.

In fact, an attempt by the New Jersey legislature to license computer professionals met with enormous resistance and was ultimately defeated, says Jim Webber, president of Omnicron, an IT management advisory consortium in Mountain Lakes, N.J. "We smashed that down so fast," he says. "It's a negative feeling about those generic programs and a positive feeling about specific, skill-based, validated technology skills." □

Villalta is a freelance writer in East Brunswick, N.J.

PRESENTING YOUR RAISE PROPOSAL

Give your boss the ammunition (the list) he needs to get approval from his superiors, or give your boss enough information to enable him to make the decision.

The amount of a salary increase usually is based on where you fall in the market comparison, along with your significant contributions to the bottom line of the company.

Another factor many managers consider is how you perform your duties compared with other people on the staff with similar technical responsibilities, and what they are being compensated. Be prepared for your manager to think it over; review the information you have provided, get approval and get back to you.

Leave your manager with a positive impression, and reinforce your commitment to the organization. If your manager says no, ask what would be required to get the raise you deserve and desire.

Don't go and get another offer to use as leverage to get a raise. You may burn a bridge at the other company when you eventually turn down its offer.

It's a great time in the computer industry for your technical talents. Give it your best shot. You may be pleasantly surprised by the great total compensation package you can arrange. □

Fajard is vice president of training and marketing at The Partners, a computer industry search firm in Torrance, Calif., that specializes in placing software professionals throughout the West Coast. She can be reached at: www.jobbrowser.com.

A LINA FAFARD TO NEGOTIATE YOUR BEST RAISE IN IS

job's intrinsic value is important to us all. And though we don't usually admit it, money is, too. Even if you earned an income worthy of Bill Gates, you probably would still want a raise as a formal recognition of your performance.

Unfortunately, because across-the-board raises are usually low, we need to negotiate to make up the difference.

RAISE YOU DESERVE
List your contributions and accomplishments. Write out your understanding of the company's mission and vision.

Use salary surveys, recruiters and other sources to find out what the market pays someone with your talent and experience.

Many IS professionals are getting an average 15% increase to take a new job. Depending on how your salary compares with the market survey, you could get up to 30% if you're underpaid. Companies usually are willing to pay higher salaries for workers with specific software package expertise such as SAP AG's R/3 or PeopleSoft.

Clarify your goals with those of the company. List how meeting your goals will benefit the company's bottom line. Decide what you want your total compensation package to be, and let the negotiations begin.

Increasing your base salary may not be the only way to increase your income.

THE PACKAGE DEAL

Many companies are moving toward a low across-the-board raise (2% per year) and are adding other forms of compensation such as new technology training, formal education reimbursement, bonuses, stock options, sabbaticals, additional vacation time and a company-discounted automobile. Find out about all the incentives your company has to offer.

Consider these points before you request a raise:

- Don't be demanding.
- Be sensitive to the timing. If your boss is in a great mood, go for it. If not, wait.

UNDERSTANDING SALARY RANGES

Most companies have a salary range for each position. Find out what your job's salary range is and where you fall in that range.

Salary ranges usually overlap between junior and senior positions. You may need a promotion to get the compensation you deserve. If you must obtain a promotion to get your desired salary, find out what you need to do, or if an exception would be made in your case.

BADGE of

CONTINUED FROM PAGE 77

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Featured in: provided of training and mentoring at The Bureau of computer industry search firm in Toronto, a staff that specializes in placing system professionals throughout the West Coast. She can be reached at www.pillboxnet.com.

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LINA FAFARD

HOW TO NEGOTIATE YOUR BEST RAISE IN IS



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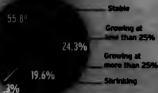
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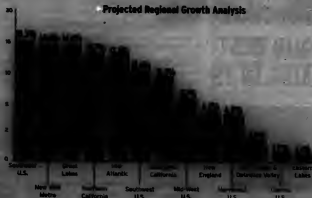
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REGIONAL SCOPE

North Carolina

OUT
of RETIREMENT

Highly desired for their loyalty and flexibility, IS retirees are being lured back to the fold *By Melanie Menagh*

15 SALARIES IN NORTH CAROLINA

TITLE	NORTH CAROLINA TOTAL COMPENSATION	NATIONAL AVERAGE
Chief information officer	\$151,600	\$123,000
Director of systems development	\$101,900	\$82,000
Director of networks	\$93,600	\$74,000
Senior systems analyst	\$48,400	\$56,000
Computer operations manager	\$48,400	\$56,000
Database manager	\$46,600	\$61,000
Webmaster/Web designer	\$45,000	\$51,000
Systems analyst	\$46,200	\$51,000

Source: Computerworld's 1997 Annual Salary Survey

WHEN JAMES Griffin, 53, retired two years ago from his job as supervisor of computer operators at the University of North Carolina at Chapel Hill, he didn't intend to spend his days on the links or in a recliner. "I wanted to find a part-time job," he says. "A programming manager at UNC gave me a call and said he had a position."

Griffin's career, which stretches back to the days of IBM tab equipment with punch cards, included 30 years in operations. Programming was a new field for him. "I thought it would be a challenge, interesting," he says. "Of course, I had some reservations. Would I be able to do the work?" But Griffin learned on the job and has been doing it for two years. "I feel comfortable and enjoy keeping my mind working without having to do the eight hours every day," he says.

Griffin is one of many information technology retirees who have moved to, or refused to move from, North Carolina. They are lured by the good weather, easy access to the mountains or ocean, reasonable cost of living, golf courses and college basketball. As back-to-work contractors, they can sign on for a year or two, then travel. "I work four days, 30 hours per week," Griffin says. "I'm able to get out and visit friends and relatives. My wife travels in her work, so I've been able to go with her."

More companies are welcoming the special skills a more mature employee can offer. "You couldn't find anyone better," says Elaine Whitten Davis, manager of business technology at Celanese Accrete in Charlotte, N.C. "The older staffers here understand their priorities. They're great at putting together project plans, planning resources, covering issues, achieving critical milestones and

communicating what they're doing to businesspeople. I'm sorry: you just don't find that with youth."

But don't think that the trend is new. Fred Taggart will tell you that some "retirees" have made a comfortable living in IT for years.

Living in the Detroit area, Taggart tried to retire in 1984, just before he turned 65. He was working in the information systems department at Uniroyal Tires Corp. as a mainframe Cobol and Focus programmer. His Focus skills were noticed by another company, which offered him a contracting job.

"I said, 'You don't realize how old I am. I'm 64.' He said, 'I don't care how old you are. Can you do the work?'" Taggart recalls. The result was a bidding war. Taggart took a contracting job, which led to his eventual move to North

Carolina. He's still at it.

"I would say, if a retiree has any Cobol background, [many] companies and the government are really looking for programmers of any kind for year 2000," Taggart says. "If a person has data pro-

cessing skills, they don't care if they've been retired for five years. It wouldn't take them long to catch up." □

Melanie is a freelance writer in Maple Corner, Va.

Southern hospitality

Retirees aren't the only information services workers enjoying fruitful employment in North Carolina.

"Right now, you could almost throw a dart at a list of companies here you'd like to work for, and you'd be OK," says Don McLaurin, president of the Computer Consulting Group, a recruiting firm with offices in Charlotte, Greensboro and Raleigh. "Banking is big in Charlotte and Winston-Salem. Pharmaceuticals are also hiring, centered around the Research Triangle/Raleigh area. But all over the state there's all kinds of manufacturing — textiles, furniture, chemicals. It's a great marketplace for IS talent."

Companies here want workers with all types of IS skills, especially skills that tie in to specific applications.

"There's a lot of shortfall in the area of prepackaged integrated solutions," says David Rizzo, chairman and CEO of Osprey Systems, Inc., a Charlotte, N.C., company that specializes in electronic-commerce applications. "There are fewer demands for pure custom programming and more for implementing prepackaged solutions and integrating them into the company's environment. It's important for people to have

skill sets based on a certain product."

There is also strong demand for Internet technologies, Java, Microsoft Certified Systems Engineers and people to oversee migration from Novell, Inc.'s NetWare to Windows NT. Companies also need IT professionals to service legacy systems, from year 2000 projects on down.

"A lot of smaller firms who are in the supply chain of larger firms are having to address older systems and implement integrated solutions that allow them to tie in to their customers' chains," Rizzo says. "If you have those kinds of skills, you can get a job around here in about a minute."

As for salaries, the money's pretty good, McLaurin says. "You won't see salaries like in Boston or New York or the West Coast, but we don't see much difference if people are coming from Cincinnati."

"Companies are going to great lengths," says Stephen Jarrell, executive director for administrative information services at the University of North Carolina at Chapel Hill. "They're offering [retiree] big signing bonuses and high bonuses for recruiting people. They're trying every kind of perk."

And yet, calling in the cavalry of recent retirees.

—Melanie Menagh

NORTH CAROLINA CAREERS

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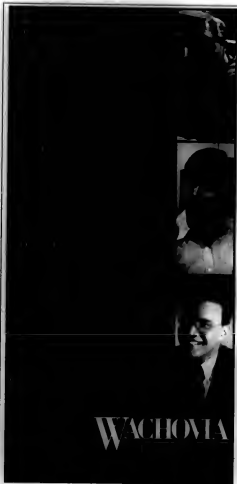
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COMMENTARY

You're vulnerable. Plan on it

Allan E. Alter

If you think you're a rising star, remember this: What goes up, comes down — and fast.

The more successful you are, the more you need to remember just how vulnerable you are. Success loves to play tricks. When you become a senior IS manager

or a CIO, you can be blindsided by anxious executives and power grabs. You need to include some vulnerability planning with your career planning.

You never know when a trap will spring. I once heard about an IS executive who wanted to teach users some IS guidelines. So he handed out paperweights embossed with helpful hints about standards. It was a fatal mistake: Other executives thought he was acting like an arrogant nag. He left the company soon after.

It may be consultants that do you in — they sometimes have hidden missions. They may have been asked to check on you, your staff or your boss' staff. Consultants don't like talking about it or doing it, but those 1/2 missions are a fact of life.

By the way, if you send out a consultant on a secret mission, it can backfire if your underlings catch on. That helped wreck the career of one prominent CIO. When an outsourcing arrangement soured, and he came under fire, his successor told me, none of the divisional IS executives would support the boss. They remembered the consultant/spy he had sent to check on them.

When should you feel vulnerable?

When you take a new job, you can be undermined by unrealistic early expectations and first impressions.



How about when the company changes its strategy, throwing IS out of alignment with the business? Or you could be vulnerable when drastic cost-cutting is necessary or when line managers are secretly afraid of your prospects.

You're vulnerable when you advocate change. Talk to the people you hope to influence. You need to understand not just how to convince them, but what you shouldn't say or do if you want to avoid looking like an amateur or a jerk.

And did I mention the year 2000 crisis, the staffing shortage and all those late, overpriced projects? Vulnerable, vulnerable, vulnerable.

I'm not advocating for anxiety. I'm just saying, "Three cheers for anxiety." Just keep your eyes open, and don't believe your press.

And know your weaknesses. Do you lack technical knowledge? Or business knowledge? Are your communications skills less than ideal? If you can't over-

come those, compensate by hiring people who are strong where you are weak. Find some technologists who can serve as your lieutenants if the bots and bytes aren't your strong suit. If you're a technologist, recruit some outgoing line managers who are excited by IT to serve as intermediaries with business department heads.

But don't rely on just one person. And make sure you provide a career path for those lieutenants. Otherwise, they may come to see you as an obstacle instead of a mentor. Then you'll just be vulnerable again, this time to a palace coup.

So know when you're most vulnerable, and think about how to reduce your vulnerability.

Managing your vulnerabilities may not excite you as much as a big juicy project, and you can't put it on your resume. But remember this: Although your achievements and connections may get you your dream job, it's your vulnerabilities that determine whether you keep it. □

Allan is Computerworld's department editor, Managing. His Internet address is allan_alter@cw.com.

Figuring the odds on Netscape

David Moschella

Is Netscape up for sale? You bet. The company has done nothing to quell the rising tide of rumors and speculation. It appears to want a deal ASAP.

After all, how many enterprise sales can the company make while its very future is being so openly called into question? From Netscape's perspective, it might be best if something were announced before its first-quarter financials.

But the big question is never whether a company is up for sale. The real issue is whether anyone will actually make an acceptable offer and, if so, who that might be. Here are my latest acquisition odds and the logic behind them:

Nothing happens: 4-1. Although IBM, Sun, Oracle and others would like to see Netscape succeed, it isn't clear that it's in any one company's interest to shell out \$2 billion for the right to take on Microsoft. When a group's interests outweigh those of any individual member, you may have a formula for talk rather than action. (No wonder the group is increasingly known as NOISE — Netscape, Oracle, IBM, Sun and Everybody else.)

Those same companies also hope Novell hangs in there — but there sure haven't been any takes.

Sun: 6-1. Why would a company that gets most of its revenue from hardware want to buy a software vendor? Simple: Sun will find it increasingly difficult and eventually impossible to keep up with Intel's price/performance. Sun just doesn't have the volumes. Consequently, there's a good chance that Sun will eventually wind down SPARC and shift to running Solaris on Intel's next-generation Merced. At that point, Sun would become predominantly a software company. Netscape would give Sun more weapons with which to fend off NT.

A caveat: Scott McNealy likes to keep

his company focused, and Netscape represents a huge and risky distraction.

IBM: 8-1. Eighteen months ago, an IBM takeover of Netscape would have made a lot of sense. But IBM has gone so far down the road with Lotus/Domino, packing up Netscape could lead to internal chaos. Right or wrong, Lou Gerstner hasn't shown the slightest interest in browsers. He seems comfortable relying on Notes to draw the line against Microsoft's enterprise software expansion. But maybe Gerstner's seeming indifference just makes him a good poker player.

Oracle: 12-1. It may be put-up-or-shut-up time for Larry Ellison. After the Apple lease, if he passes on Netscape, his ability to land a thin-client, anti-Microsoft crusade



must be seriously questioned. But with Oracle's sharply lower share price, the firm doesn't have much room in which to maneuver. More now than at any other time, the interests of Oracle and those

of Ellison may not be in synch.

America Online: 20-1. There's no way AOL wants to take on Netscape's software business. But Netscape took in nearly \$500 million in advertising and other Web site revenue last year — without having the foggiest notion of how to be a content or media company.

Combination deal: 3-1. Indeed, it's the clear AOL interest that makes some sort of multiparty arrangement the most likely outcome. AOL's previous experience with CompuServe and WorldCom provides a good working example. There are many ways such a solution could be structured. Perhaps IBM, Sun or Oracle would take Netscape's enterprise software. Perhaps the browser business would become some sort of jointly funded NOISE initiative.

The bottom line is that all these vendors know they benefit if Netscape's browser remains a market leader. They know Microsoft has almost won.

And they know the clock is ticking. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is david_moschella@cw.com.

The Back Page

altcw

Disparages & page from the ringes of the electio from ler

TOP 10 LESSONS
REQUESTED AT
HOW-TO Web SITE
WWW.LEARN2.COM

1. Get by in French
2. Make a fire in a fireplace
3. Wash, dry and fold laundry
4. Whistle
5. Sell your used car
6. Check out a used car
7. Eat sushi
8. Get a good (facial) shave
9. Repair a scratched CD
10. Tie a necktie



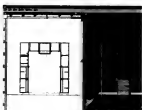
REARVIEW MIRROR NETWORK

Like Maxwell Smart talking into his shoe, road warriors soon will talk into their rearview mirrors and get an answer to questions such as, "Where the heck am I?" Johnson Controls in Plymouth, Mich., and Highway Master in Dallas have developed an automotive mirror packed with systems that respond to voice commands. The Auto-Link mirror connects to a cellular network to provide navigational assistance, roadside help, messaging and Internet access. It costs \$750, plus network charges.

Online take-out

Waiter.com in San Jose, Calif., the nation's first online service for placing take-out orders at restaurants (<http://waiter.com>), has unveiled My Waiter personalized Web pages. Customers can create a custom page with links to favorite restaurants and a "hot list" of previous orders. Started by two Stanford Business School alumni in 1995, Waiter.com can fax orders to more than 1,000 restaurants in 12 states.

The perfect closet



Virtus Corp., a developer of desktop visualization software in Cary, N.C., has created a sales application that helps dealers of Closet-Maid organizing systems sell their wares to home builders. The laptop sales tool shows builders the parts, costs and stages of

custom closet projects so there are no surprises.

"The Virtual Closet Designer is a cutting-edge sales tool that differentiates Closet-Maid from our competition by providing a technology that changes the way we do business," says

Rob Clements, president of ClosetMaid, a unit of Clairson International Corp. in Ocala, Fla.

Clements says the software will reduce the sales cycle by showing builders what the end result of a custom project will look like and exactly what parts are needed.

Inside Lines

I promise this won't hurt a bit

Computer Associates only have demonstrated with its Cheyenne acquisition that not all CA takeovers entail massive gutting of the workforce. But during a teleconference last week on CA's bid for Computer Sciences, CA Chairman Charles Wang seemed aware of the company's fearsome reputation with employees who are in its acquisition sights. Wang mentioned three times in the span of about 30 seconds that CA wants to keep all of Computer Sciences' workers if the deal goes through. He also ran down a laundry list of CA's "family-oriented benefit programs," such as on-site child care and health clubs.

NetWare by any other name

Just two weeks ago, A. J. Dennis, Novell's director of business intelligence and market research, stopped by Computerworld and told us, "The IntranetWare name has been scrapped, and we're only going to use NetWare from now on, since everyone identifies with it." In the Press, Link, company's latest press release dated Feb. 15, IntranetWare was still the name. So what? Novell will continue to use IntranetWare to refer to Version 4.11, but future versions, including Version 5.0 due in the second half, will be called NetWare, according to a company spokesman. Confused? So are we.

Underdog GroupWise wins TCO test

Meaning rivals Lotus and Microsoft each have been loudly bragging that their E-mail systems have the lowest total cost of ownership (TCO). But the heavyweights were consistently quiet after a recent Gartner Group report showed their underdog Novell's GroupWise proved to be the least expensive over a three-year period when compared with Lotus Notes and Microsoft Exchange.

Pie squared

You have to wonder whether the cream pie recently thrown in Bill Gates' face was what inspired Inside Out Networks, Inc. in Austin, Texas, to send a reporter's cream pie inside a FedEx box. The pie was decorated with bright blue, yellow and white frosting in the colors and shape of the company's logo. Of course, when it arrived, the frosting was smeared all over the box.

You heard it here first

Your 2000 analyst Lou Marocco at the Gartner Group offices in Watertown, Mass., is slated to appear on a CBS 60 Minutes installment in March. But why? Marocco predicts that by year's end, Congress will mandate that private companies disclose their year 2000 compliance efforts. And because many companies will realize they can't replace systems in time, they will call in the risk-management teams to create work-around procedures, including manual ones. Marocco also said federal regulators will step up the regulation of software and hardware companies to prevent similar year 2000 glitches.

Paper chase

18th staffers working on the IT effort at the 1998 Winter Olympic Games in Nagano have been communicating via Nets. But 18th didn't take Japan's love for paper into account when they set up the system. All Japanese change requests to the Nagano computer system were written and distributed by hand.

B exiles appearing in the comics and on cubicle walls, Dilbert and his pals will debut this fall on television. Executive producers of the animated series include creator Scott Adams and Larry Charles, a producer for sitcoms such as Seinfeld and Mad About You. Adams shouldn't have any trouble filling the weekly series; fans gleefully regale him with tales of corporate absurdity. While waiting to turn on, tune in and boot up, you can phone your industry gossip and news tips to Computerworld news editor Patricia Keefe at (508) 820-8183, or E-mail them to patricia.keefe@cw.com.



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